

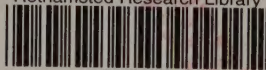


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THE BOMBYLIIDAE OF THE
ETHIOPIAN REGION

BOMBYLIIDAE OF THE ETHIOPIAN REGION

BASED ON MATERIAL IN THE
BRITISH MUSEUM (NATURAL HISTORY)

BY
MARIO BEZZI



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PREFACE

THE importance of monographs in the advancement of Dipterology was urged more than half a century ago by Baron C. R. Osten Sacken. It is true that the recommendation alluded to had reference to North America, the scene of a considerable portion of the distinguished Russian Dipterist's entomological career; but the need for accurate monographs is certainly not less in the case of Africa, in spite of the fact that the percentage of new species awaiting description is naturally far higher in the Ethiopian than in the Nearctic Region. So far at least as concerns the Bombyliidae, a family of peculiar attractiveness and interest owing to the charm of the adult insects and the parasitic habits of the larval stages, it is hoped that the present volume by Professor Mario Bezzi will go far to supply the need in question.

The genesis of the work now presented to the entomological public was the submission to Professor Bezzi by the Imperial Bureau of Entomology, through its Director, Dr. G. A. K. Marshall, C.M.G., F.R.S., of a large amount of Bombyliid material received in recent years from various parts of Tropical Africa. To this the undetermined African specimens of the same family already in the British Museum (Natural History) were subsequently added; while the whole of the material belonging to the Imperial Bureau was, after determination and description, presented to the National Collection, which therefore contains the types of the numerous new species described in the following pages. It need scarcely be added that the Trustees are deeply sensible of the generosity of the Imperial Bureau of Entomology, displayed once again in its most welcome gift.

The English manuscript of the present monograph, as supplied by its author, has been most carefully revised throughout by Major E. E. Austen, D.S.O., who has also selected subjects for and supervised the preparation of the illustrations, and, with material assistance from Mr. F. Barnett, has seen the work through the press.

CHARLES J. GAHAN,
Keeper of Entomology.

*British Museum (Natural History),
March, 1924.*

LIST OF FIGURES IN THE TEXT

FIG.		PAGE
1.	<i>Bombylius bombiformis</i> , sp. nov. ♀. × 2 $\frac{2}{3}$	35
2.	<i>Bombylius argentatus</i> , Fabr. Antenna of ♂, dorsal side downwards. × 55	38
3.	<i>Bombylius megaspilus</i> , Bezzi. Wing of ♀. × 8	59
4.	<i>Bombylius punctifer</i> , Bezzi. Wing of ♀. × 8	59
5.	<i>Systoechus robustus</i> , Bezzi. Wing of ♂. × 7	64
6.	<i>Eurycarenum melanurus</i> , sp. nov. ♂. × 3 $\frac{2}{3}$	81
7.	<i>Hyperusia luteifacies</i> , sp. nov. Head of ♀ in profile. × 16.	109
8.	<i>Systropus leptogaster</i> , Lw. Wing of ♂. × 8	122
9.	<i>Systropus rugosus</i> , sp. nov. Wing of ♀. × 8	124
10.	<i>Antonia suavissima</i> , Lw. ♂. × 4	137
11.	<i>Lomatia neavei</i> , sp. nov. Wing of ♂. × 8	144
12.	<i>Petrorossia gratiosa</i> , Bezzi. Wing of ♂. × 8	155
13.	<i>Petrorossia gratiosa</i> , Bezzi. Wing of ♀. × 8	155
14.	<i>Anthrax aygulus</i> , Fabr. Wing of ♀. × 6	163
15.	<i>Spongostylum princeps</i> , sp. nov. Wing of ♂. × 8	176
16.	<i>Dicranochista simpsoni</i> , sp. nov. Wing of ♂. × 8	180
17.	<i>Thyridanthrax macquarti</i> , Bezzi. Wing of ♀. × 8	206
18.	<i>Thyridanthrax ternarius</i> , sp. nov. Wing of ♀. × 7	210
19.	<i>Litorrhynchus dentiferus</i> , Bezzi. Wing of ♂. × 4 $\frac{1}{2}$	218
20.	<i>Litorrhynchus pseudocollaris</i> , sp. nov. Wing of ♂. × 4 $\frac{1}{2}$	220
21.	<i>Exoprosopa polyspila</i> , sp. nov. Wing of ♀. × 8	238
22.	<i>Exoprosopa spoliata</i> , sp. nov. Wing of ♀. × 6 $\frac{1}{2}$	240
23.	<i>Exoprosopa rutiloides</i> , sp. nov. Wing of ♀. × 4	248
24.	<i>Exoprosopa dolichoptera</i> , sp. nov. Wing of ♂. × 5	258
25.	<i>Exoprosopa curvicornis</i> , sp. nov. Wing of ♀. × 5 $\frac{1}{2}$	263
26.	<i>Exoprosopa nemesis</i> , Fabr. Wing of ♀. × 6	287
27.	<i>Exoprosopa decipiens</i> , sp. nov. Wing of ♀. × 6	289
28.	<i>Exoprosopa argentifrons</i> , Macq. Wing of ♀. × 8	293
29.	<i>Exoprosopa obtusa</i> , sp. nov. Wing of ♀. × 5	297
30.	<i>Exoprosopa protuberans</i> , sp. nov. ♂. × 2 $\frac{1}{2}$	298

FIG.		PAGE
31.	<i>Exoprosopa dimidiata</i> , Macq. Wing of ♀. $\times 5\frac{1}{2}$. .	303
32.	<i>Exoprosopa perpulchra</i> , sp. nov. Wing of ♀. $\times 6$. .	311
33.	<i>Exoprosopa batrachoides</i> , Bezzi. Wing of ♂. $\times 5$. .	327
34.	<i>Exoprosopa poeciloptera</i> , sp. nov. Wing of ♂. $\times 6$. .	333
35.	<i>Exoprosopa cosmoptera</i> , sp. nov. Wing of ♂. $\times 12$. .	335
36.	<i>Exoprosopa goliath</i> , sp. nov. Wing of ♂. $\times 3\frac{1}{2}$. .	341
37.	<i>Exoprosopa spectrum</i> , Speiser. Wing of ♀. $\times 5$. .	346
38.	<i>Exoprosopa chionea</i> , sp. nov. ♂. $\times 4$. . .	357
39.	<i>Exoprosopa chrystallina</i> , sp. nov. Wing of ♀. $\times 12$. .	359
40.	<i>Hyperalonia atricosta</i> , sp. nov. Wing of ♂. $\times 7$. .	367
41.	<i>Hyperalonia virgo</i> , sp. nov. Wing of ♀. $\times 6$. . .	369
42.	<i>Hyperalonia thyridophora</i> , Bezzi. Wing of ♀. $\times 4$. .	372
43.	<i>Hyperalonia mars</i> , sp. nov. Wing of ♂. $\times 3\frac{1}{2}$. . .	374
44.	<i>Hyperalonia venus</i> , Karsch. Wing of ♂. $\times 3\frac{1}{2}$. . .	376
45.	<i>Hyperalonia venus</i> , Karsch. Wing of ♀. $\times 3\frac{1}{2}$. . .	376
46.	<i>Hyperalonia cupido</i> , sp. nov. Wing of ♀. $\times 4$. . .	378

THE BOMBYLIIDÆ OF THE ETHIOPIAN REGION

INTRODUCTION

THROUGH the Authorities of the British Museum (Natural History), and the kindness of Dr. Guy A. K. Marshall, C.M.G., F.R.S., Director of the Imperial Bureau of Entomology, I have received for study an extensive collection of Ethiopian Bombyliidae, which enables me to extend my previous paper on this subject.* At the same time there have been submitted to me very large collections of the same flies from the South African Museum at Cape Town; from the Hungarian Museum at Budapest; from the Museo Civico at Genoa; and from Messrs. Alluaud and Jeannel in Paris, on which I have written separate papers, with descriptions of new genera and species.

With this very rich material and that in my private collection available for study, it was possible to obtain a much more complete knowledge of the African Bombyliid fauna than that of Hermann Loew, as published in his "Dipteren-fauna Süd-afrika's" of 1860. This was the origin of the present work, which is the result of many years of study.

Before proceeding to describe the new forms, it will be well to give a general survey of the family, with notes on classification and geographical distribution, and with a catalogue of all the Ethiopian species at present known.

PART I.—GENERAL

THE Bombyliidae, a very important and numerous family of beautiful flies, can scarcely fail to excite interest owing to the diversity of their appearance, in correspondence with a parasitic mode of life of different kinds. In warm and sunny countries, often including regions of arid desert, Bombyliidae as a rule are well represented, and this statement is certainly true with reference to the African continent.

It is interesting to note a certain affinity between the Bombyliidae and the Syrphidae. Both are flower visitors, and of

* Report on a collection of Bombyliidae (Diptera) from Central Africa, with description of new species. *Trans. Ent. Soc. London*, 1911, pp. 605-656, Pl. L. (1912).

great importance as conveyers of pollen for the fertilisation of plants; both possess the faculty of hovering, and are often clothed with a coat of very soft and variegated hair. In the case of many genera, the species are much alike in size and general appearance, and when resting upon or hovering about flowers, representatives of the two families may easily be confused. Thus, *Bombylius* and allied forms may be mistaken for certain *Eristalinae* and *Milesiinae*; *Systropus* for *Cerioides*; *Tomomyza* and *Pantostomus* for *Paragus*; *Antonia* for *Xanthogramma*. The resemblances in question are probably connected with the fact that both Bombyliidae and Syrphidae are mimics of Hymenoptera, which frequent the same flowers. In Syrphidae, however, mimicry of Vespids is more frequent than in Bombyliidae, which are probably an older group of Diptera, showing even more variety than the former in the adult stage.

The number of described species of Bombyliidae is already considerable. While Schiner (*Reise Novara*, Diptera, p. 116, 1868) down to 1864 knew only 1036 species, there are 1696 in Kertész's Catalogue of 1909 (to the end of the year 1907); from 1908 to 1919 about 280 additions were made, thus bringing the total number of known species to about 2000. Since the list of species is so numerous, it is not surprising that the genera proposed to contain them are very many in number. A chronological list of these, with their type-species, is appended.

1758.

Bombylius, Linnaeus (*major*, L.).

1763.

Anthrax, Scopoli (*morio*, Scop. nec L. = *anthrax*, Schrank 1781).

1794.

Voluccella, Fabricius nec Geoffroy 1764 (*florea*, F.).

Cytherea, Fabricius (*obscura*, F.).

1796.

Mulio, Latreille (*Cytherea obscura*, F. 1794).*

1802.

Cyllenina, Latreille (*maculata*, Latr. = *Asilus rusticus*, Rossi 1790).

Usia, Latreille (*Voluccella florea*, F. 1794).

1803.

Phthiria, Meigen (*Bombylius pulicarius*, Mikan 1796).

Conophorus, Meigen (*Bombylius maurus*, Mikan 1796 = *B. virescens*, F. 1787).

Toxophora, Meigen (*Asilus maculatus*, Rossi 1790).

1804.

Ploas, Latreille (*hirticornis*, Latr. 1804 = *Bombylius virescens*, F. 1787).

1817.

Amictus, Wiedmann (*Bombylius oblongus*, F. 1805).

1820.

Stygia, Meigen nec Latreille 1804 (*Bibio sabaeus*, F. 1781).

Mima (Megerle) Meigen (*Anthrax phaeoptera*, Meig.).

Geron, Meigen (*Bombylius hybridus*, Meig. 1804).

* Proposed for *Cytherea*, under the false impression that this last name was preoccupied by *Cythere*, Müller 1785, Crust.

- Tomomyza*, Wiedemann (*anthracoides*, Wied.).
Apatomyza, Wiedemann (*punctipennis*, Wied.).
Thlipsomyza, Wiedemann (*Bombylius compressus*, F. 1805).
Corsomyza, Wiedemann (*simplex*, Wied.).
Systropus, Wiedemann (*macilentus*, Wied.).

1822.

- Lomatia*, Meigen (*Bibio sabaeus*, F. 1781).

1827.

- Cephenus*, Berthold (*Systropus macilentus*, W. 1820).*

1830.

- Dolichomyia*, Wiedemann (*nigra*, Wied.).

1834.

- Megapalpus*, Macquart (*Phthiria capensis*, W. 1828).
Henica (*Enica*), Macquart (*Anthrax longirostris*, Wied. 1819).

1835.

- Lepidophora*, Westwood (*Ploas aegeriiformis*, Gray 1832 = *Toxophora lepidocera*, Wied. 1828).

1838.

- Platygaster*, Zetterstedt nec Latreille 1809 (*arcticus*, Zett.).

1839.

- Cyrtosia*, Perris (*marginata*, Perr.).

1840.

- Exoprosopa*, Macquart (*Anthrax pandora*, Macq. 1826 = *Bibio capucinus*, F. 1781).
Spongostylum (*Spogostylum*), Macquart (*mystaceum*, Macq.).
Callistoma (*Callostoma*), Macquart (*fascipennis*, Macq.).
Litorrhynchus (*Litorhynchus*), Macquart (*hamatus*, Macq.).
Comptosia, Macquart (*fascipennis*, Macq.).
Anisotamia, Macquart (*ruficornis*, Macq.).
Plesiocera, Macquart (*algira*, Macq.).
Oncodocera (*Ogcodocera*), Macquart (*dimidiata*, Macq. = *Mulio leuco-proctus*, Wied. 1828).
Adelidea, Macquart (*fascipennis*, Macq. = *Bombylius anomalus*, Wied. 1821).
Heniconeura (*Eniconeura*), Macquart (*fascipennis*, Macq.).
Dasypalpus, Macquart (*Phthiria capensis*, Wied. 1828).
Cyclorrhynchus (*Cyclorhynchus*), Macquart nec Sund. 1835 (*testaceus*, Macq.).

1841.

- Ligyra*, Newman (*Anthrax bombyliiformis*, MacLeay 1827).
Neuria, Newman nec Guénée 1841 (*Anthrax praeargentatus*, MacLeay 1827).

1842.

- Sphaerogaster*, Zetterstedt nec Dejean 1821 (*Platygaster arcticus*, Zett. 1838).

1844.

- Platypygus*, Loew (*chrysanthenis*, Loew).
Eclimus, Loew (*perspicillaris*, Loew).
Chalcochiton, Loew (*speciosus*, Loew).
Oligodranes, Loew (*obscuripennis*, Loew).

1848.

- Heterostylum*, Macquart (*flavum*, Macq.).

* Change of the name *Systrophus*, of Latreille, under the presumption that it was preoccupied by *Systropha*, Illiger 1806, Hymenopt.; Berthold (*Nat. Fam. Thierr.*, p. 506, 1827.) latinised the French word *Céphène*, of Latreille.

1849.

Sericosoma, Macquart (*fascifrons*, Macq.).
Acrotrichus, Macquart (*gibbicornis*, Macq.).

1852.

Trinaria, Mulsant (*Anthrax interrupta*, Muls. = *A. mutila*, Wied. 1818).
Parisus, Walker (*paterculus*, Walk.).
Choristus, Walker (*bifrons*, Walk.).

1855.

Lasioprosopa, Macquart (*bigotii*, Macq. = *Corsomyza nigripes*, Wied. 1820).
Triplasius, Loew (*Bombylius bivittatus*, Loew).
Systoechus, Loew (*Bombylius sulphureus*, Mik. 1796).
Sobarus, Loew (*Bombylius anomalus*, Wied. 1821).
Platamodes, Loew nec Ménetries 1849 (*Bombylius depressus*, Loew).
Legnotus, Loew nec Schiödt 1848 (*Bombylius trichorhaeus*, Loew).
Scinax, Loew nec Wagler 1830 (*Bombylius sphenopterus*, Loew).
Sparnopolius, Loew (*Bombylius fulvus*, Wied. 1821 nec Meig. 1820 = *B. brevisrostris*, Macq. 1840).
Dischistus, Loew (*Bombylius minimus*, Schrank 1781).

1856.

Argyrospila (*Argyrospyla*), Rondani (*Anthrax jacchus*, F. 1805).
Glossista, Rondani (*Mulio infuscatus*, Meig. 1820).
Bombylisoma, Rondani (*Bombylius sulphureus*, F. 1805 = *B. minimus*, Schrank 1781).
Antonia, Loew (*suavissima*, Loew).

1857.

Cyrtophorus, Bigot nec Leconte 1850 (*pictipennis*, Big.).

1858.

Acrophthalmyda, Bigot (*Cyllenina elegantula*, Big. 1857 = *Bombylius sphenopterus*, Loew 1855).

1860.

Argyromoeba (*Argyromoeba*), Schiner (*Anthrax tripunctata*, Meig. 1820).
Eurycarenum, Loew (*Bombylius laticeps*, Loew 1852).
Crocidium, Loew (*poecilopterum*, Loew).
Apolysis, Loew (*humilis*, Loew).
Lagochilus, Loew (*Cyllenina afra*, Wied. 1828 = *Anthrax longirostris*, Wied. 1819).

1863.

Liophleba (*Lyophlaeba*), Rondani (*lugubris*, Rond.).
Macrocondyla, Rondani (*pictinervis*, Rond.).
Alyosia, Rondani (*Comptosia maculipennis*, Macq. 1846).
Hyperalonia, Rondani (*Anthrax erythrocephala*, F. 1805 = *Stomoxys morio*, F. 1775).
Heteralonia, Rondani (*Exoprosopa occulta*, Rond. = *E. oculata*, Macq. 1840).
Lonchocerus (*Logocercus*), Rondani (*Anthrax holosericeus*, F. 1794).
Bombylisoma, Rondani nec Rondani 1856 (*decorata*, Rond. = *Bombylius sphenopterus*, Loew 1855).
Nomalonia, Rondani (*Cyllenina afra*, Macq. 1840, nec Wied.).
Alonipola, Rondani (*Cyllenina pluricellata*, Macq. 1855 = *Anthrax longirostris*, Wied. 1819).
Truquia, Rondani (*insularis*, Rond.).
Thlipsogaster (*Thlypsogaster*), Rondani (*Thlipsomyza cartanea*, Macq. 1840).
Lordotus, Loew (*gibbus*, Loew).
Popsia, A. Costa (*ridibunda*, A. Costa).

1864.

Villa, Lioy (*Anthrax concinnus*, Meig. 1820 = *A. abbadon*, F. 1794).
Defilippia, Lioy (*Anthrax minos*, Meig. 1804).

1865.

Nectaropota, Philippi (*setigera*, Phil.).

1867.

Diplocampta, Schiner (*singularis*, Schin.).

Tritoneura, Schiner (*Comptosia lugubris*, Phil. 1865).

Callynthrophora, Schiner (*capensis*, Schin.).

Ostentator, Jaennicke (*punctipennis*, Jaenn. = *Bombylius sphenopterus*, Loew 1856).

Poecilognathus, Jaennicke (*thripsomyzoides*, Jaenn.).

1868.

Prorachthes, Loew (*ledereri*, Loew).

1869.

Hemipenthes, Loew (*Musca morio*, L. 1758).

1871.

Dimorphophora, Walker (*syrphoides*, Walk. = *Antonia suavissima*, Loew 1856).

1872.

Aphoebantus, Loew (*cervinus*, Loew).

Leptochilus, Loew nec Saussure 1852 (*modestus*, Loew).

Allocotus, Loew nec Mayr 1864 (*edwardsii*, Loew).

1873.

Codionus, Rondani (*chlorizans*, Rond.).

Heterotropus, Loew (*albidipennis*, Loew).

Glabella, Loew nec Swainson 1840 (*femorata*, Loew).

1875.

Thevenemyia, Bigot (*californica*, Big.).

1876.

Paranthrax, Bigot (*Anthrax rufiventris*, Blanch. 1852).

1877.

Dipalta, Osten Sacken (*serpentina*, O. S.).

Triodites, Osten Sacken (*mus*, O. S.).

Anastoechus, Osten Sacken (*barbatus*, O. S. = *Bombylius notidulus*, F. 1794).

Pantarbes, Osten Sacken (*capito*, O. S.).

Comastes, Osten Sacken (*robustus*, O. S.).

Paracosmus, Osten Sacken (*Allocotus edwardsii*, Loew 1872).

Epibates, Osten Sacken (*funestus*, O. S.).

1886.

Stonyx, Osten Sacken (*clelia*, O. S.).

Isopenthes, Osten Sacken (*jaennickeana*, O. S.).

Astrophanes, Osten Sacken (*adonis*, O. S.).

Lepidanthrax, Osten Sacken (*Anthrax disjunctus*, Wied. 1830).

Poecilanthrax, Osten Sacken (*Anthrax alcyon*, Say 1824).

Chrysanthrax, Osten Sacken (*Anthrax fulvohirta*, Wied. 1821 = *A. cypris*, Meig. 1820).

Thyridanthrax, Osten Sacken (*Anthrax selene*, O. S.).

Eucessia, Coquillett (*rubens*, Coq.).

Velocia, Coquillett (*Anthrax cerberus*, F. 1794).

Mancia, Coquillett (*nana*, Coq.).

Sisyrophanus, Karsch (*homeyeri*, Karsch).

Rhabdopselaphus, Bigot (*mus*, Big.).

Peringueyimyia, Bigot (*capensis*, Big.).

1887.

Hyalanthrax, Osten Sacken (*Anthrax faustina*, O. S.).

Epacmus, Osten Sacken (*Leptochilus modestus*, Loew 1872).

Exoptata, Coquillett (*divisa*, Coq.).

Stomylomyia, Bigot (*leonina*, Big. = *Tomomyza europaea*, Loew 1869).

1888.

Eucharimyia, Bigot (*dives*, Big. = *Bombylius pulchellus*, Wulp 1880).

1891.

Amphicosmus, Coquillett (*elegans*, Coq.).*Metacosmus*, Coquillett (*exilis*, Coq.).

1892.

Thevenetimyia, Bigot (*Thevenemyia californica*, Big. 1875).*Cyrtomyia*, Bigot (*Cyrtophorus pictipennis*, Big. 1857).*Psudammictus*, Bigot (*Amictus heteropterus*, Wied. 1821).

1894.

Aldrichia, Coquillett (*ehrmanni*, Coq.).*Exepacmus*, Coquillett (*johnsoni*, Coq.).*Geminaria*, Coquillett (*Lordotus canalis*, Coq. 1887).

1895.

Desmatoneura, Williston (*argentifrons*, Will.).*Desmatomyia*, Williston (*anomala*, Will.).

1896.

Coquillettia, Williston nec Uhler 1890 (*Spongostylum vandykei*, Coq. 1894).

1901.

Sphenoidoptera, Williston (*varipennis*, Will.).

1902.

Glbellula, Bezzi (*Platygaster arcticus*, Zett. 1838).*Legnotomyia*, Bezzi (*Bombylius trichorhoeus*, Loew 1855).

1905.

Aspiroptera, Künckel (*Anthrax flava*, Meig. 1820).

1906.

Psiatholasius, Becker (*bombyliiformis*, Beck.).

1907.

Empidideicus, Becker (*carthaginiensis*, Beck.).*Cononedys*, Hermann (*Anthrax stenura*, Loew 1870).*Conogaster*, Hermann nec Brauer and v. Bergenstamm 1892 (*erythraspis*, Herm.).*Malthacothrica*, Becker (*glauca*, Beck.).*Parabombylius*, Williston (*Thlipsogaster ater*, Coq. 1894).

1908.

Petrorossia, Bezzi (*Bibio hesperus*, Rossi 1790).

1909.

Sinaia, Hermann (*kneuckeri*, Herm.).*Anthracoemoeba*, Sack (*obscura*, Sack).*Chrysamoeba*, Sack (*vulpina*, Sack).*Satyramoeba*, Sack (*Anthrax etrusca*, F. 1794).*Molybdamoeba*, Sack (*Anthrax tripunctata*, Meig. 1820).*Leucamoeba*, Sack (*Bibio aethiops*, F. 1781).*Chalcamoeba*, Sack (*Anthrax virgo*, Egg. 1859).*Psamatamoeba*, Sack (*Anthrax isis*, Meig. 1820).*Chionamoeba*, Sack (*Bibio nivea*, Rossi 1790).*Alepidophora*, Cockerell (*pealei*, Cock.).*Lithocosmus*, Cockerell (*coquilletti*, Cock.).*Megacosmus*, Cockerell (*mirandus*, Cock.).*Melanderella*, Cockerell (*glossalis*, Cock.).*Pachysystropus*, Cockerell (*rohweri*, Cock.).

1912.

Isotamia, Bezzi (*daveyi*, Bezzi).

1913.

Gyrocraepedum, Becker (*pleskei*, Beck.).*Antoniaustralia*, Becker (*hermanni*, Beck.).*Canaria*, Becker (*Anthrax brunnipennis*, Macq. 1838).*Mariobezzia*, Becker (*zarudnyi*, Beck.).*Semiramis*, Becker (*punctipennis*, Beck.).

1914.

- Alomatia*, Cockerell (*fusca*, Cock.).
Geronites, Cockerell (*stigmatis*, Cock.).
Protolomatia, Cockerell (*antiqua*, Cock.).
Protophthiria, Cockerell (*palpalis*, Cock.).
Verrallites, Cockerell (*cladurus*, Cock.).

1915.

- Edmundiella*, Becker (*niveifrons*, Beck.).
Pseudogeron, Cresson (*mitis*, Cress.).

1916.

- Exhyalanthrax*, Becker (*Anthrax vagans*, Loew).
Protepacmus, Cockerell (*setosus*, Cock.).
Cyrtomorpha, White (*paganica*, White).
Marmasoma, White (*sumptuosa*, White).
Sisyromyia, White (*Bombylius auratus*, Walk.).
Docidomyia, White (*puellaris*, White).

1917.

- Acreotrichites*, Cockerell (*scopulicornis*, Cock.).
Neacreotrichus, Cockerell (*Acreotrichus atratus*, Coq. 1904).

1920.

- Conophorina*, Becker (*bicellaris*, Becker).
Ylasoia, Speiser (*Anthrax pegasus*, Wied.).

The classification of so extensive a family as the Bombyliidae is not an easy matter, and has always been very unsatisfactory. I think however that, as in many other cases, the main concepts are to be found in the writings of the earliest authors; it is indeed generally the case that the first genera, instituted by Linnaeus and his successors, correspond for the most part to the higher groups created subsequently. The chronological list given above proves this with sufficient clearness.

Linnaeus placed the species of the family known to him in his genus *Bombylius* (*major*, *medius*, *capensis*, *minor*), while the other forms which came under his examination (*morio*, *hottentota*, *maura*) were left in the great genus *Musca*. Scopoli assigned these latter species to his new genus *Anthrax*. Thus the two genera first erected correspond to the two main lines along which the family development has proceeded, the Linnaean genus *Bombylius* to the *Homoeophthalmae*, and the Scopolian genus *Anthrax* to the *Tomophthalmae*. For this reason some of the older writers, such as Latreille, Fallén, Zetterstedt and Macquart, always wrote as though there were two distinct families, the *Bombyliidae* and the *Anthracidæ*, which were united into one by Meigen.

The genera subsequently erected correspond to the other natural subfamilies. Thus Fabricius added the genera *Voluccella* and *Cytherea*, which are the types of the *Usinae* and of the *Cythereinae*. Latreille, on the ground of preoccupation, changed the two Fabrician names to *Usia* and *Mulio*, and erected the genus *Cyllenina*, which is the type of the *Cyleniinae*. Meigen created three genera, *Phthiria*, *Conophorus* and *Toxophora*, which are the types of three different subfamilies. If we add the genera *Lomatia* (originally described as *Stygia*) of Meigen and *Systropus*

of Wiedemann, we have the principal divisions of the family, as they were in 1820. For many years the family was regarded as consisting solely of the *Bombyliinae* and *Anthracinae*. The first attempt at a further division of the family was made in 1868 by Schiner,* who distinguished four groups, viz. *Anthracinae*, *Lomatiinae*, *Toxophorinae* and *Bombyliinae*. The principal characters, upon which these divisions were based, were:—the form and length of the praefurca; the shape of the head; the form and position of the antennae; and the length of the proboscis. This subdivision was followed by me, in 1903, in the second volume of the Catalogue of Palaearctic Diptera; † and, with the addition of the *Systropinae*, it was adopted in 1909 by Verrall, ‡ who proposed an additional subfamily, termed the *Platypyginae*, for the group with a simple cubital vein. On the other hand, Becker, in his paper on the classification of the family published four years later, § greatly multiplied the subdivisions, of which he distinguishes no fewer than fifteen, which are of course, much more restricted than those previously recognised. After a series of investigations, I find that, as a criterion of affinity, primary importance attaches to the character of the eyes, to which I first drew attention in 1908. || Next to the eyes, the form of the head should be considered; it is indeed very suggestive to compare the head of a species of *Bombylius* with one belonging to *Exoprosopa*. The former has the occiput flat, or even in some cases (*Systropus*) concave; the fringe of hairs is placed near the margin of the eyes; and the neck is short, the head thus being less movable. In *Exoprosopa*, the occiput is strongly developed, being produced and bilobate above; it shows in the middle a deep excavation, on the borders of which is placed the fringe, which is therefore widely separated from the borders of the eyes; lastly the neck is long, and the head very movable. These two characters form a reliable basis for dividing the family, and, especially the eyes, will furnish a sure answer to any question. All the species with indented and bisected eyes have the form of head as in *Exoprosopa*; the simple-eyed species have a simple head; but in some cases there are simple eyes with a produced occiput (*Cyllenina*), or bisected (but not indented) eyes with an occiput which is not produced (*Corsomyza*, *Heterotropus*).

I propose the name *Bombyliidae Homoeophthalmae* for the section in which the eyes are simple, that is, not indented on the hind border (even if bisected by the different form of the facets);

* *Reise Novara*, Diptera, pp. 113–117 (1868).

† *Katalog der paläarktischen Dipteren*, Bd. II (Budapest: 1903).

‡ *British Flies*, Vol. V, p. 478 (London: 1909).

§ *Genera Bombyliidarum*: *Ann. Mus. Zool. Acad. Imp. Sc. de St. Petersburg*, T. XVII, pp. 421–502 (1913).

|| Cf. Bezzi, "Eine neue *Aphobantus*-Art aus dem paläarktischen Faunengebiet": *Zeitschr. für syst. Hymenopt. und Dipt.*, Bd. VIII, pp. 26–36 (1908).

and the designation *Bombyliidae Tomophthalmae* for the section in which the eyes are indented, and often have the beginning of a bisecting line. These two groups are to be considered as the two main branches of the family. They have originated from simple-eyed and simple-headed forms, which are, geologically speaking, the most ancient. According to Handlirsch,* *Toxophora* and *Systropus* are two very old stems, the latter of which, with its concave occiput, is the type of the *Homoeophthalma*-series, while the former, with its convex occiput, is the type of the *Tomophthalma*-series. Cockerell's observations† show that the *Homoeophthalmae* comprise the more ancient forms, which are chiefly of Old World origin.

Cytherea and its allies, which have the appearance and habits of *Exoprosopinae*, with which they are united by most writers, are located by their simple eyes in the *Homoeophthalma*-series, near the *Bombyliinae*.

The venational character of the short or long praefurca, to which the first place is assigned by Becker and by Cockerell, is of secondary value. But in the *Tomophthalma*-series, a long praefurca is typical, while a short one is typical for the *Homoeophthalma*-series. The *Cylleniinae*, which have simple eyes but a produced occiput, generally also exhibit a long praefurca.

I have accepted the classification proposed by Becker since it is the result of very long study, and is based upon wide knowledge of the family. But I have adapted it to my principle of the character of the eyes, and have reduced the number of the subfamilies by combining the *Conophorinae* with the *Bombyliinae*; moreover, I have taken the *Toxophorinae* in a different sense.

The subfamilies accepted by me may be distinguished as follows:—

- 1 (20). Hind border of the eyes absolutely entire, or very rarely with a deep sinuosity, but never indented; eyes, as a rule, without bisecting line, or, if divided, such division is due to a separation between the enlarged and the small facets, and is confined to the male sex.
- 2 (19). Occiput flat, not bilobate above, and without central cavity; occipital fringe placed just at border of eyes; antennae, as a rule, approximate at base.
- 3 (18). Prothorax not specially developed, and not beset with strong, long, curved macrochaetae.
- 4 (17). Metasternum not specially developed; abdomen not very slender, never pedunculate; eyes of female separated.
- 5 (8). Tibiae with three longitudinal rows of long spicules; proboscis long; palpi one-jointed; body bristly.
- 6 (7). Abdomen broad, of oval shape; antennae usually approximate at base *Bombyliinae*.
- 7 (6). Abdomen elongate, cylindrical; antennae usually widely separated *Cythereinae*.

* "Die fossilen Insekten und die Phylogenie der rezenten Formen" (Leipzig: 1906–1908).

† "The Fossil and Recent Bombyliidae Compared": *Bull. Amer. Mus. of Nat. Hist.*, Vol. XXXIII, pp. 229–236 (1914).

- 8 (5). Tibiae bare or only pilose, without three distinct rows of spicules; if sometimes these rows are distinct, palpi two-jointed; body not or very rarely bristly.
- 9 (10). Face much longer than frons *Mariobezziinae*.
- 10 (9). Face much shorter than, or at most as long as frons.
- 11 (12). Cubital fork widely open; if rather narrow, the body short and broad *Usiinae*.
- 12 (11). Cubital fork but little widened or even wanting; if rather broad, the body is narrow and elongate.
- 13 (14). Cubital fork entirely wanting; body usually bare and hump-backed *Cyrtosiinae*.*
- 14 (13). Cubital fork present.
- 15 (16). Discoidal cell broadened at end, much broader than second posterior cell; eyes in male bisected *Heterotropinae*.
- 16 (15). Discoidal cell not broadened at end; and not broader than second posterior cell; eyes in male not divided *Phthiriinae*.
- 17 (4). Metasternum very strongly developed; abdomen slender and pedunculate; body bare; eyes united in both sexes or nearly so.
Systropinae.
- 18 (3). Prothorax well developed, in the shape of an anterior ring, which is beset with strong and curved macrochaetae *Toxophorinae*.
- 19 (2). Occiput prominent, bilobate above, with a central cavity, on the borders of which is placed the occipital fringe *Cylleniinae*.
- 20 (1). Hind border of the eyes distinctly indented; eyes with a more or less distinct bisecting line in both sexes; occiput prominent, bilobate above, with the fringe on the borders of the central cavity; antennae, as a rule, widely separate from each other.
- 21 (22). Second longitudinal vein arising before middle cross vein, at an acute angle *Lomatiinae*.
- 22 (21). Second vein arising opposite to middle cross vein or nearly so, and always at a right angle.
- 23 (24). Antennal style with a pencil of hairs at end; metapleura bare; squamae with a hairy fringe *Anthracinae*.
- 24 (23). Antennal style destitute of hairs at end; metapleura hairy; squamae with a scaly fringe *Exoprosopinae*.

In such a complex family as the Bombyliidae, the subfamilies distinguished above are to be considered as artificial, and intermediate forms are of frequent occurrence; but, in the present state of our knowledge of the family they may be useful for practical purposes.

A closer acquaintance with the bionomics and ethology of Bombyliidae will perhaps lead to a more natural arrangement. The limited amount already known under these headings shows that all the species are parasitic, and that habits in many subfamilies are similar, a fact which indicates either that the subfamilies are not natural, or that the same habits have developed independently in different evolutionary series.

I will now give a brief account of what is known as to the larval stages in Bombyliidae:

1. *Bombyliinae*.

Bombylius occurs in nests of solitary bees of the genera *Andrena*, *Colletes* and *Halictus*. *Systoechus* and *Anastoechus* are parasitic in egg-cases of

* Prof. Cockerell, in his paper of 1914, forms the new subfamily *Glabellulinae* for the single genus *Glabellula*, with which he thinks the gen. *Mythomyia* is related.

locusts of the genera *Oedipoda*, *Dociostaurus*, *Calliptamus*, etc. *Sparnopoliis* is parasitic on larvae of Coleoptera Lamellicornia (*Lachnosterna*).

2. *Cythereinae*.

Cytherea and *Callistoma* parasitise the egg-cases of locusts of the genera *Calliptamus*, *Dociostaurus*, etc.

3. *Phthiriinae*.

Geron is parasitic in Lepidopterous larvae of the genera *Nephopteryx* and *Fumea*.*

4. *Systropinae*.

Systropus is parasitic on Lepidoptera of the family *Limacodidae*.

5. *Toxophorinae*.

Toxophora occurs in the nests of solitary wasps, such as *Eumenes*, *Pelopoëus* and *Odynerus*.

6. *Lomatiinae*.

Aphoebantus is parasitic in the egg-cases of locusts, like *Calliptamus*, etc.

7. *Anthracinae*.

Anthrax is parasitic on larvae of solitary bees, such as *Osmia*, *Podalirius* and *Megachile*, and on those of solitary and fossorial wasps, like *Odynerus*, *Hoplomerus*, *Cemonus* and *Trypoxylon*. *Spongostylum* is probably parasitic on bees (*Osmia*, *Chalicodoma*, *Megachile*, *Xylocopa*), wasps (*Pelopaeus*, *Cemonus*) and beetles (*Cicindela*).

8. *Exoprosopinae*.

Hemipenthes is a hyperparasite of parasitic Hymenoptera (*Ophion*, *Banchus*), and of parasitic Diptera (*Masicera*) living at the expense of nocturnal Lepidoptera. Species of *Villa*, of the *flava*-group, are parasites of nocturnal Lepidoptera of the genera *Mamestra*, *Panolis*, *Agrotis*, *Dichromia*, *Taeniocampa*, etc.; while those of the *ixion*-group, like *pygarga*, Loew, are parasitic on Coleopterous larvae of the family Tenebrionidae (*Podonta nigrita*, F.).† *Thyridanthrax* is parasitic in egg-cases of locusts of the genera *Stauronotus* and *Arcyptera*; or in Dipterous puparia of the genus *Glossina*.‡ *Chrysanthrax* is a hyperparasite of Scoliid wasps of the genus *Elis*, parasitic on larvae of Lamellicorn Coleoptera. All that is known with regard to life-history in the very extensive genus *Exoprosopa* is that two North American species, *E. fascipennis*, Say, and *E. pueblensis*, Jaenn., are hyperparasites of species of the Hymenopterous genus *Tiphia*, which are parasitic on Coleoptera Lamellicornia (*Lachnosterna*); but it is very probable that the majority of Ethiopian species feed upon the egg-cases of locusts.

It is noteworthy that the habit of preying upon the egg-masses of locusts is characteristic of the entire family, occurring in not fewer than four subfamilies (*Bombyliinae*, *Cythereinae*, *Lomatiinae* and *Exoprosopinae*). Moreover, it is very curious to find that all the species exhibiting this habit present a certain

* See Mik, *Wien. entom. Zeit.*, XV, p. 106 (1896).

† See Portschinsky in the Russian Journal *Sadovod* (*The Horticulturist*), p. 244 (1915).

‡ See Austen, *Bull. Ent. Res.*, V, p. 91 (1914); and Waterston, *l. cit.*, VI, p. 82 (1915).

similarity in general appearance, as may be seen on comparing an *Anastoechus* with a *Cytherea*, an *Aphoebantus* or a *Thyridanthrax*. But habits seem to vary even in the same restricted genus, as shown by *Thyridanthrax*, *Villa* or *Spongostylum*.

The genera of Bombyliidae at present known may be arranged as follows, in the thirteen subfamilies recognised by me.*

I. BOMBYLIIDAE HOMOEOPHTHALMAE.

1. *Bombyliinae*.

E.	<i>Triplasius</i> , Loew.
P., E., O., A., Na., Nt.	<i>Bombylius</i> , L. (<i>Choristus</i> , Walk.; <i>Parisus</i> , Walk.).
O.	<i>Eucharimyia</i> , Big.
Na., Nt.	<i>Parabombylius</i> , Will.
P., E., O., A., Na., Nt.	<i>Systoechus</i> , Loew.
P., E., O., Na.	<i>Anastoechus</i> , O. S.
E.	<i>Eurycarenum</i> , Loew.
Na., Nt.	<i>Heterostylum</i> , Macq. (<i>Comastes</i> , O. S.).
E.	<i>Sisyrophanus</i> , Karsch.
Nt.	<i>Acrophthalmyda</i> , Big. (<i>Scinax</i> , Loew; <i>Bombylisoma</i> , Rond.; <i>Ostentator</i> , Jaenn.).
A.	<i>Sisyromyia</i> , White.
P., E., A., Nt.	<i>Dischistus</i> , Loew (<i>Bombylisoma</i> , Rond.).
Na., Nt.	<i>Sparnopolius</i> , Loew.
E.	<i>Adelidea</i> , Macq. (<i>Sobarus</i> , Loew).
Na.	<i>Lordotus</i> , Loew.
Na.	<i>Geminaria</i> , Coq.
P., Na.	<i>Conophorus</i> , Meig. (<i>Ploas</i> , Latr.).
P.	<i>Prorachthes</i> , Loew.
P.	<i>Sinaia</i> (Hermann) Becker, 1916.
E.	<i>Conophorina</i> , Beck.
P.	<i>Codionus</i> , Rond.
Na.	<i>Aldrichia</i> , Coq.
Nt.	<i>Platamodes</i> , Loew.
Nt.	<i>Nectaropota</i> , Phil.

2. *Cythereinae*.

Na.	<i>Pantarbes</i> , O. S.
P.	<i>Cytherea</i> , F. (<i>Mulio</i> , Latr.)

* In the subjoined list, Zoological Regions are indicated as follows : P. = Palaearctic; E. = Ethiopian; O. = Oriental; A. = Australian; Na. = Nearctic; Nt. = Neotropical.

Fossil genera are distinguished by †.

Genera marked with an asterisk (*) are unknown to me in nature, or, owing to insufficient data, cannot be assigned to a definite position in the system.

- P. *Chalcochiton*, Loew (*Lonchocerus*, Rond.).
- P. *Glossista*, Rond.
- P. *Callistoma*, Macq.
- Nt. *Sericosoma*, Macq.
- P. *Gyrocraspedum*, Beck.
3. *Mariobezziinae*.
- P. *Mariobezzia*, Beck.
4. *Usiinae*.
- Na. †**Lithocosmus*, Cock.
- E. *Corsomyza*, Wied. (*Lasioprosopa*, Macq.).
- E. *Callynthrophora*, Schin.
- E. *Megapalpus*, Macq. (*Dasypalpus*, Macq.).
- P., E., *Psiatholasius*, Beck.
- P. *Legnotomyia*, Bezzi (*Legnotus*, Loew).
- P. *Usia*, Latr. (*Voluccella*, F.).
5. *Cyrtosiinae*.
- P. *Cyrtosia*, Perr.
- P. *Platypygus*, Loew (*Popsia*, A. Costa).
- P. *Glabellula*, Bezzi (*Platygaster*, Zett.; *Sphaerogaster*, Zett.; *Glabella*, Loew).
- A. *Cyrtomorpha*, White.
- P., E. *Empidideicus*, Beck.
6. *Heterotropinae*.
- P. *Heterotropus*, Loew (*Malthacotricha*, Beck.).
7. *Phthiriinae*.
- P., E., A., Na., Nt. *Phthiria*, Meig. (*Cyclorrhynchus*, Macq.; *Poecilognathus*, Jaenn.).
- E. *Crocidium*, Loew.
- P. *Semiramis*, Beck.
- E. *Apatomyza*, Wied.
- A. **Acreotrichus*, Macq.
- Na. †**Acreotrichites*, Cock.
- Na. **Neacreotrichus*, Cock.
- Na. **Desmatomyia*, Will.
- P., E. *Apolysis*, Loew.
- P. *Oligodranes*, Loew.
- P., E., O., A., Na. *Geron*, Meig.
- Na., Nt. *Rhabdopselaphus*, Big. (*Pseudogeron*, Cress.).
- Na. †**Geronites*, Cock.

8. *Systropinae*.

Na.	†* <i>Melanderella</i> , Cock.
Na., Nt.	<i>Dolichomyia</i> , Wied.
P., E., O., Na., Nt.	<i>Systropus</i> , Wied. (<i>Cephenus</i> , Berth.).
Na.	†* <i>Pachysystropus</i> , Cock.

9. *Toxophorinae*.

P., E., O., Na., Nt.	<i>Toxophora</i> , Meig. <i>Heniconeura</i> , Macq.).
Na., Nt.	<i>Lepidophora</i> , Westw.

10. *Cylleninae*.

Na.	†* <i>Protepacmus</i> , Cock.
P.	<i>Cyllenid</i> , Latr.
E.	<i>Peringueyimyia</i> , Big.
E.	<i>Nomalonia</i> , Rond.
E.	<i>Henica</i> , Macq. (<i>Lagochilus</i> , Loew; <i>Alonipola</i> , Rond.).
P.	†* <i>Palaeoamictus</i> , Menn.
P., E.,	<i>Amictus</i> , Wied. (<i>Pseudoammictus</i> , Big.; <i>Thlipsomyza</i> , Wied.; <i>Thlipso-</i> <i>gaster</i> , Rond.; <i>Truquia</i> , Rond.).
A.	<i>Marmasoma</i> , White.
Nt.	* <i>Sphenoidoptera</i> , Will.
P., Na.	<i>Eclimus</i> , Loew.
P., Na.	<i>Epibates</i> , O. S.
Na.	* <i>Thevenetimyia</i> , Big. (<i>Thevenemyia</i> , Big.).
Nt.	<i>Cyrtomyia</i> , Big. (<i>Cyrtophorus</i> , Big.).
E.	<i>Tomomyza</i> , Wied.
Na.	†* <i>Verrallites</i> , Cock.
Na.	* <i>Amphicosmus</i> , Coq.
Na.	* <i>Metacosmus</i> , Coq.
Na.	* <i>Paracosmus</i> , O. S. (<i>Allocotus</i> , Loew).
Na.	†* <i>Megacosmus</i> , Cock.

II. BOMBYLIIDAE TOMOPHTHALMAE.

11. *Lomatiinae*.

Na., Nt.	<i>Oncodocera</i> , Macq.
P.	<i>Anisotamia</i> , Macq.
A., Nt.	<i>Comptosia</i> , Macq. (<i>Neuria</i> , Newm.).
A.	<i>Docidomyia</i> , White.
Nt.	<i>Macrocondyla</i> , Rond.
Nt.	<i>Ylasoia</i> , Speis.
A., Nt.	<i>Alyosia</i> , Rond.
A., Nt.	<i>Ligyra</i> , Newm. (<i>Liophleba</i> , Rond.; <i>Tritoneura</i> , Schin.).
P., E.	<i>Antonia</i> , Loew (<i>Dimorphophora</i> , Walk.).

A.	<i>Antoniaustralia</i> , Beck.
P., E., A.	<i>Lomatia</i> , Meig. (<i>Stygia</i> , Meig.).
P.	<i>Edmundiella</i> , Beck.
P., E.	<i>Canaria</i> , Beck.
Na.	†* <i>Alepidophora</i> , Cock.
Na.	<i>Epacmus</i> , O. S. (<i>Leptochilus</i> , Loew).
P., Na.	<i>Aphoebantus</i> , Loew (<i>Triadites</i> , O. S.).
Na.	<i>Exepacmus</i> , Coq.
P.	<i>Cononedys</i> , Herm. (<i>Conogaster</i> , Herm.).
P.	<i>Eucessia</i> , Coq.
P., E., O.	<i>Petrorossia</i> , Bezzi.
P.	<i>Chionamoeba</i> , Sack.
Na.	* <i>Desmatoneura</i> , Will.
E.	<i>Isotamia</i> , Bezzi.
P.	<i>Stomylyomyia</i> , Big.
P.	<i>Plesiocera</i> , Macq.

12. *Anthracinae*.

P., E., O., A., Na., Nt.	<i>Anthrax</i> , Scop. (<i>Satyramoeba</i> , Sack; <i>Leucamoeba</i> , Sack; <i>Chalcamoeba</i> , Sack).
P., E., O., A., Na., Nt.	<i>Spongostylum</i> , Macq. (<i>Argyramoeba</i> , Schin.; <i>Anthracamoeba</i> , Sack; <i>Chrysamoeba</i> , Sack; <i>Molybdamoeba</i> , Sack; <i>Psamatamoeba</i> , Sack).
Na.	<i>Coquillettia</i> , Will.

13. *Exoprosopinae*.

P., Na.	<i>Hemipenthes</i> , Loew.
P., E., O., A., Na., Nt.	<i>Villa</i> , Lioy (<i>Hyalanthrax</i> , O. S.; <i>Aspiloptera</i> , Künck.).
Na.	<i>Lepidanthrax</i> , O. S.
Na.	<i>Poecilanthrax</i> , O. S.
Nt.	<i>Paranthrax</i> , Big.
P., E., O., A., Na., Nt.	<i>Thyridanthrax</i> , O. S. (<i>Exhyalanthrax</i> , Beck.).
Na.	<i>Chrysanthrax</i> , O. S.
Na.	<i>Astrophanes</i> , O. S.
Na.	<i>Mancia</i> , Coq.
Na.	<i>Stonyx</i> , O. S.
Na.	<i>Dipalta</i> , O. S.
Nt.	<i>Diplocampta</i> , Schin.
Na.	<i>Isopenthes</i> , O. S.
E.	<i>Litorrhynchus</i> , Macq.
P., E., O., A., Na., Nt.	<i>Exoprosopa</i> , Macq. (<i>Trinaria</i> , Muls.; <i>Deflippia</i> , Lioy; <i>Argyrospila</i> , Rond.; <i>Heteralonia</i> , Rond.; <i>Mima</i> , Meig.; <i>Exoptata</i> , Coq.).
P., E., O., A., Na., Nt.	<i>Hyperalonia</i> , Rond. (<i>Velocia</i> , Coq.).

No linear arrangement being possible, in the above list the more ancient and primitive forms are those placed in the middle of the list itself; while the more recent forms are those at the two extremities, viz. the *Bombyliinae* among the *Homoeophthalmae*, and the *Exoprosopinae* among the *Tomophthalmae*.

The geographical distribution of the family Bombyliidae exhibits certain peculiarities which are worthy of note. Owing to the fact that the family belongs more especially to warmer countries, the number of species rapidly increases from North to South. Zetterstedt mentions only four species (all *Anthracinae*) as occurring in Lapland; Verrall records nine species in Great Britain; Lundbeck refers to 14 species from Denmark; Schiner cites 60 from Austria; and 115 species are mentioned by Arias as being found in Spain. In the Mediterranean-Caspian Subregion the total is much higher, and the Ethiopian Region must have a very large number of species. From the Palaearctic Region about 580 species are known, and about 470 from the Nearctic, only six species being common to both Regions. The total of 270 species known from the Ethiopian Region is thus a very low one. In the present work and other recent papers by myself, a large number of additional species is described, thus bringing the total to 594, which is certainly much less than half of the species actually in existence.

The Mediterranean-Caspian Subregion, of which the subfamilies *Cythereinae*, *Mariobezziinae*, *Usiinae*, *Cyrtosiinae* and *Heterotropinae*, are characteristic, is very rich in Bombyliidae. But the Bombyliid fauna of this Subregion is sharply differentiated from that of the Ethiopian Region; and it is interesting to note that some very characteristic Mediterranean genera, which are well represented in North Africa, are absolutely wanting south of the Sahara (e. g. *Conophorus*, *Prorachthes*,* *Cytherea*, *Chalcochiton*, *Callistoma*, *Legnotomyia*, *Usia*, *Platypygus*, *Heterotropus*, *Oligodranes*, *Cyllenina*, *Anictus*, *Anisotamia*, *Cononedys*, *Stomylomyia*). On the other hand, it is interesting to note how the number of peculiar and more characteristic genera of the Ethiopian fauna increases from the centre of the Continent to the south, the more striking forms being exclusively South African (e. g. *Adelidea*, *Corsomyza*, *Callynthrophora*, *Megapalpus*, *Crocidium*, *Apatomyza*, *Peringueyimyia*, *Nomalonia*, *Henica*, *Tomomyza*, and the new genera erected by me). The *Cylleniinae*, with their four peculiar genera, are very characteristic.

The differences between the Bombyliid fauna of the Ethiopian and that of the Oriental Region are deserving of attention. Species common to both Regions are unknown; but there is a number of species which are closely allied, and may be considered as mutually representative. The Oriental fauna is much the poorer of the two, having only about 140 known species,

* In *Trans. Ent. Soc. London*, 1907, p. 380, an unnamed species of this genus is, however, recorded from Cape Town.

belonging to eight subfamilies, while the species of the Ethiopian Region belong to 11 subfamilies. The *Bombyliinae* are well represented; the *Cythereinae* are absent; the *Usiinae* are very scarce; the *Cyrtosiinae* are wanting; the *Phthiriinae* are scarce; the *Cylleninae* are unrepresented; the *Lomatiinae* are very scarce; while the *Anthracinae* and *Exoprosopinae* are abundantly represented. The difference between the two faunas as regards the *Cylleninae* and the *Lomatiinae* is very striking; the genus *Exoprosopa* (*sens. lat.*) is richer in the Ethiopian, while *Hyperalonia* is proportionally more strongly represented in the Oriental Region.

There can be no doubt that the Oriental fauna, compared with the Ethiopian, is poor not only in species, but especially in well-differentiated forms, peculiar forms being quite lacking. Genera characteristic of or peculiar to the Oriental Region are unknown. This fact is very striking, especially if the Oriental be compared with the Ethiopian or American fauna: the latter has no fewer than 40 genera peculiar to it. Even the rather poor Australian fauna shows some genera which are peculiar and rich in species. The Neotropical Region possesses about 360 known species. There are no subfamilies peculiar to America, while, on the other hand, the *Mariobezziinae*, *Usiinae*, *Cyrtosiinae* and *Heterotropinae* are absolutely wanting in the New World; the *Cythereinae* are represented only by *Pantarbes*, which is very like *Corsomyza*, and is therefore perhaps better placed in the *Usiinae*.

From Australia and Polynesia about 150 species are known; from New Zealand we know only two species of *Comptosia*, with, in addition, the problematic genus *Fraudator*. It is interesting to note that the peculiar group formed by the genera with a strongly looped and recurrent end to the second longitudinal vein is only to be found in South America (chiefly in Chile) and in Australia; it is completely wanting in South Africa. A detail worthy of mention is that, in Australia, the important subfamily *Anthracinae* (that is, *Argyramocba*), which is well represented in all the other Regions, is very scarce; but, since the fauna is not well known, this statement requires confirmation. Many other subfamilies are wanting in Australia, but the most striking feature (which also requires confirmation) is the complete absence of the *Systropinae* and *Toxophorinae*, the two subfamilies which are believed to be the most primitive. These two subfamilies each consist of two genera, one of which in each case (*Systropus* and *Toxophora*) is very numerous in species, and is represented in all the warmer countries of the world, while the other (*Dolichomyia* and *Lepidophora*) is scarce and exclusively American.

The *Exoprosopinae*, which are very numerous but rather uniform in character in the Old World, seem to have attained their greatest differentiation in America, where even isolated forms occur. Professor Cockerell thinks that the group probably originated in the Old World.

The following "List of the *Bombyliidae* of the Ethiopian Region" includes the new genera and new species described in the present work, as well as in papers prepared by me at the same time on material from various collections, as stated above.

LIST OF THE BOMBYLIIDAE OF THE ETHIOPIAN REGION.

1. BOMBYLIUS, L. (+ *Parisus*, Walk. and *Triplasius*, Loew).

bivittatus, Loew.
lateralis, Fabr.

flagrans, sp. n.
bombiformis, sp. n.
bicoloratus, sp. n.
analisis, Fabr.
suffusus, Walk.
acroleucus, Bezzi.
haemorrhoidalis, Bezzi.
fulvonotatus, Wied.

argentatus, Fabr.
delicatus, Wied.
mutilatus, Bezzi.
plorans, sp. n.
lugens, sp. n.
nigrilobus, sp. n.
fusculobus, sp. n.
ornatus, Wied.
var. *pleuralis*, n.
kilimandjaricus, Speis.
tripudians, sp. n.
rufiventris, Macq.
furiosus, Walk.
auricomus, Bezzi.

modestus, Loew. var. *phaeopterus*, Bezzi.

eurhinatus, Bezzi.
brachyrrhynchus, Bezzi.
globulus, Bezzi.
impurus, Loew.
flavus, Macq.
mundus, Loew.
claripennis, Macq.
sessilis, Bezzi.
acutus, sp. n.
xanthrocerus, Bezzi.
luteipennis, sp. n.
marginellus, Bezzi.
paterculus, Walk.
fucatus, Bezzi.
ruficeps, Macq.
limbipennis, Macq.
pallidulus, Walk.
albiventris, Macq.

aurantiacus, Macq.
rufus, Macq.

erythrocerus, Bezzi (*rufoantennatus*, Beck.).
neithokris, Jaenn. (*appendiculatus*, Bezzi).
parallelus, sp. n.
basifumatus, Speis.
terminatus, Beck.
nigribarbus, Loew.
femoralis, sp. n.

melanopus, sp. n.
mollis, Bezzi.
disjunctus, sp. n.
obtus, sp. n.

purpureus, Bezzi.
micans, Fabr. (*micans*, Macq.).
hypoleucus, Wied. (*micans*, Macq.).
? elegans, Wied.
hirtus, Loew.
melanurus, Loew.
flaviceps, Macq.
servillei, Macq.
dimidiatus, Macq.
capensis, L.
megaspilus, Bezzi.
braunsi, Bezzi.
punctatellus, Bezzi.
punctifer, Bezzi.
inornatus, Walk.
pentaspilus, Bezzi.
obesus, Bezzi.
tinctus, Walk.
spinibarbus, Bezzi.
angulosus, Bezzi.
nigripecten, Bezzi.
peringueyi, Bezzi.
argentifer, Walk.
molitor, Wied.
simplicipennis, sp. n.
hypoxanthus, Loew.
bifidus, sp. n.

hirticeps, Bezzi.

2. SYSTOECHUS, Loew. *ferrugineus*, Macq.

- brunnipennis*, Loew.
robustus, Bezzi.
ventruosus, Bezzi.
chrySTALLINUS, sp. n.
phaeopterus, sp. n.
simplex, Loew.
tumidifrons, Bezzi.
albidus, Loew.
-
- nigripes*, Loew.
exilipes, Bezzi.
mentiens, sp. n.
melampogon, Bezzi.
vulpinus, Beck.
-
- mixtus*, Wied. (*scutellaris*,
 Wied.; *scutellatus*, Macq.;
stylicornis, Macq.).
ctenopterus, Mkn.
spini thorax, Bezzi.
-
- austeni*, sp. n.
fuligineus, Loew.
-
- scabriorstris*, Bezzi.
3. *ANASTOECHUS*, Osten Sacken.
rubricosus, Wied.
-
- macrorrhynchus*, sp. n.
-
- rubicundus*, sp. n.
spinifacies, Bezzi.
latifrons, Macq.
canus, Macq.
meridionalis, Bezzi.
varipecten, Bezzi.
cervinus, Loew.
-
- erinaceus*, Bezzi.
-
- macrophthalmus*, Bezzi.
-
- innocuus*, Bezzi.
leucosoma, Bezzi.
4. *EURYCARENUS*, Loew.
laticeps, Loew.
minimus, Bezzi.
melanurus, sp. n.
albicans, sp. n.
sessilis, Bezzi.
-
- dichopticus*, sp. n.
5. *SISYROPHANUS*, Karsch.
homeyeri, Karsch.
neavei, sp. n.
abdominalis, sp. n.
-
- leptocerus*, Bezzi.
minor, sp. n.
pyrrhocerus, Bezzi.
6. *DISCHISTUS*, Loew.
mystax, Wied. (*heterocerus*,
 Macq.).
capito, Loew.
plumipalpis, Bezzi.
heteropterus, Macq.
-
- aurifluus*, sp. n.
-
- rubicundus*, Bezzi.
niveus, Macq.
ovatus, Bezzi.
seriatus, Wied.
vittipes, Bezzi.
frontalis, Loew.
variegatus, Macq.
rufirostris, sp. n.
tripunctatus, Macq.
pusio, Wied.
argyropygus, Wied.
melanurus, Big.
-
- gemmeus*, sp. n.
lepidus, Loew.
nucalis, sp. n.
farinosus, sp. n.
-
- vitripennis*, Loew.
coracinus, Loew.
gibbicornis, Bezzi.
pectoralis, Loew.
senegalensis, Macq.
diadematus, Bezzi.
7. *ADELIDEA*, Macquart (*Sobarus*,
 Loew).
anomala, Wied. (*longirostris*,
 Wied.; *fuscipennis*, Macq.).
8. *SOSIOMYIA*, Bezzi.
comata, Bezzi.
- 8 bis. *CONOPHORINA*, Becker.
bicellaris, Big.
9. *ONIROMYIA*, Bezzi.
pachycerata, Big.
10. *GLOSSISTA*, Rondani.
fenestrata, Loew.
11. *ISOCNEMUS*, gen. n.
nemestrinus, sp. n.
12. *CORSOMYZA*, Wiedemann (*Lasio-*
prosopa, Macq.).
simplex, Wied. (*fuscipennis*,
 Macq.).
pennipes, Wied.
nigripes, Wied. (*bigotii*, Macq.).
bipustulata, sp. n.
hirtipes, Macq.
clavicornis, Wied.
anceps, sp. n.
bicolor, Bezzi.
ruficornis, Bezzi.
13. *CALLYNTHROPHORA*, Schiner.
capensis, Schin.

- magnifrons*, Bezzi.
 14. GNUMYIA, Bezzi.
brevirostris, Bezzi.
 15. HYPERUSIA, gen. n.
luteifacies, sp. n.
minor, Bezzi.
soror, Bezzi.
 16. MEGAPALPUS, Macquart (*Dasy-*
palpus, Macq.).
capensis, Wied.
nitidus, Macq.

fulviceps, Bezzi.
 17. PSIATHOLASIUS, Becker.
striatus, Bisch.
 18. CYRTOSIA, Perris.
scutellaris, Bezzi.
 19. EMPIDIDEICUS, Becker.
beckeri, Bezzi.

completus, Bezzi.

melleus, Bezzi.
 20. GONARTHRUS, Bezzi.
cylindricus, Bezzi.
hirtus, Bezzi.
chioneus, Bezzi.

cycnus, Big.
leucophys, Big.
xanthinus, Bezzi.
 21. CROCIDIUM, Loew.
poecilopterum, Loew.
immaculatum, Bezzi.
nigriacies, Bezzi.
 22. APATOMYZA, Wiedemann.
punctipennis, Wied.
 23. PSEUDOAMMICTUS, Bigot.
(*Pseudempis*, Bezzi).
heteropterus, Macq., Wied. ?
 24. PHTHRIA, Meigen.
laeta, Bezzi.
nitens, Bezzi.

pubescens, Bezzi.
lanigera, Bezzi.
pulla, Bezzi.
 25. APOLYSIS, Loew.
humilis, Loew.
 26. GERON, Meigen.
hybridus, Meig. (*capensis*,
 Walk.).
umbripennis, Bezzi.
phallophorus, Bezzi.
priapeus, Bezzi.
albifacies, Bezzi.
nasutus, sp. n.

barbatus, sp. n.
luctuosus, Bezzi.
leptocerus, Bezzi.

dichromus, Big.
 27. SYSTROPUS, Wied. (*Cephenus*,
 Berth.).
marshalli, sp. n.

trispinosus, Bezzi.
miobrochus, Speis. (*macilentus*,
 Macq.).
snowi, Ad.
crudelis, Westw.
leptogaster, Loew.
macilentus, Schin.
sanguineus, Bezzi.
clavatus, Karsch.
holaspis, Speis.
macilentus, Wied. (*attenuatus*,
 Macq.; *capensis*, Phil.).
rugosus, sp. n.
sericeus, sp. n.
silvestrii, Bezzi.*

bicuspis, sp. n.
trigonalis, sp. n.
 28. TOXOPHORA, Meigen (*Henico-*
neura, Macq.).
epargyra, Herm.
vitripennis, Bezzi.
maculipennis, Karsch.

carcelii, Guér.
trivittata, Bezzi.
maculata, Rossi.
punctipennis, sp. n.
diploptera, Speis.
coeruleiventris, Karsch.
 29. HENICA, Macquart (*Lagochilus*,
 Loew; *Alonipola*, Rond.).
longirostris, Wied. (*afra*, Wied.;
pluricellata, Macq.).
 30. NOMALONIA, Rondani.
afra, Macq.
 31. PERINGUEYIMYIA, Bigot.
capensis, Big.
 32. TOMOMYZA, Wiedemann.
anthracoides, Wied.

barbatula, Bezzi.
pallipes, Bezzi.

pictipennis, Bezzi.
 33. PANTOSTOMUS, Bezzi.
gibbiventris, Bezzi.

* *S. atratus*, Macq., seems to be a Neotropical species, perhaps the same as *fumipennis*.

34. *ANTONIA*, Loew (*Dimorphophora*, Walk.).
suavissima, Loew (*syrphoides*, Walk.).

cirrhatta, sp. n.
xanthogramena, sp. n.
nigrifrons, sp. n.
35. *LOMATIA*, Meigen (*Canaria*, Beck.).
acutangula, Loew.
neavei, sp. n.

longitudinalis, Loew.
gigantea, Bezzi.
rufa, Wied.
pictipennis, Wied. (*centralis*, Macq.; *aurata*, Macq.).
liturata, Loew.
infuscata, Bezzi.
simplex, Wied.
inornata, Loew.
conocephala, Macq.
fasciolaris, Walk.
punctifrons, sp. n.
melampogon, Loew.
pulchriceps, Loew.
cognata, Walk.

spiloptera, sp. n.
latiuscula, Loew.
pleuralis, Bezzi.
tenera, Loew.
nigrescens, Ric.
mitis, Loew.
loewii, Bezzi (*inornata*, Loew 1860).
36. *PTERAULAX*, Bezzi.
flexicornis, Bezzi.
braunsi, Bezzi.
37. *APHOEBANTUS*, Loew.
bilobatus, sp. n.
38. *PETROROSSIA*, Bezzi.
hesperus, Rossi.
var. *tropicalis*, n.
letho, Wied. (*longitarsis*, Beck.).
fuscicosta, sp. n.
vinula, Bezzi.

fulvipes, Wied.
gratiosa, Bezzi.
39. *CHIONAMOEBIA*, Sack.
frontalis, Wied.
40. *ISOTAMIA*, Bezzi.
daveyi, Bezzi.
41. *PLESIOCERA*, Macq.
biumbonata, Bezzi.
42. *CHIASMELLA*, gen. n.
laevipennis, sp. n.
43. *ANTHRAX*, Scopoli.
pithecius, Fabr. (*confusemaculatus*, Macq.; *conspurcatus*, Wied.; *spectabilis*, Loew).
hessii, Wied.
diffusus, Wied. (*maculipennis*, Macq.).
var. *decisus*, n.
subsp. *maiusculus*, n.
aygulus, Fabr.
biflexus, Loew.
trimaculatus, Wulp.
nigerrimus, sp. n.
subsp. *ocellatus*, n.
volitans, Wied.
pusillus, Wied.
hemimelas, Speis. (*homogeneous*, Bezzi).
fuscipennis, Ric. (*muscarius*, Klug; *dentatiss*, Beck.).
camptocladus, Bezzi.
massinissa, Wied.
44. *SPONGOSTYLUM*, Macquart (*Mo-lybdamoeba*, Sack).
subanthrax, sp. n.

quinquemaculatum, sp. n.

muticum, Bezzi.
var. *elutum*, Bezzi.
incisurale, Macq. (*mixtum*, Loew; *massauense*, Jaenn.).
inquirendum, Bezzi.
decipiens, Bezzi.
leucopogon, Bezzi.
saturatum, Bezzi.
punctipenne, Wied. (*punctulatum*, Macq. 1840).
niphias, Herm.
ventrale, sp. n.
hippolyta, Wied.

ocyale, Wied.

princeps, sp. n.
45. *DICRANOCLISTA*, gen. n.
simpsoni, sp. n.
46. *VILLA*, Lioy.
flavipes, Loew.
rufipes, Macq.
dizona, Loew.
dubia, Macq.
albescens, Loew.
sexfasciata, Wied. (*flavescens*, Loew).
vitripennis, Loew.
paniscoides, Bezzi.
argentina, Bezzi.
lasia, Wied.
atrisquama, sp. n.
phaeotaenia, Bezzi.

- bravae*, Bezzi.
nilatica, Jaenn.
aurocincta, Big.
apparens, Walk.
leucochila, nom. n. (*leucostoma*, Wied.).
validicornis, sp. n.
chrysothrix, sp. n.*
madagascariensis, Macq.
unifasciata, Macq.
leptopa, Thoms.
ruficeps, Macq.
-
- candidata*, sp. n.
47. *OESTRANTHRAX*, gen. n.
obesus, Loew.
speiserianus, Bezzi.
48. *SYNTHESIA*, Bezzi.
fuciformis, Bezzi.
49. *THYRIDANTHRAX* (OstenSacken), n.
lloydi, Austen.
triangularis, sp. n.
pseudoflammiger, sp. n.
beckerianus, sp. n.
argentifrons, Beck.
flammiger, Walk.
submacula, Walk.
luteolus, sp. n.
leucoproctus, Loew.
linea, Loew.
melanopleurus, Bezzi.
argenteilatus, Walk.
commiles, Walk.
-
- viduatus*, Loew.
abruptus, Loew.
lugens, Loew.
transiens, sp. n.
-
- inauratus*, Klug.
alatus, Beck.
sokotrae, Ric.
-
- calochromatus*, Bezzi.
macquarti, Bezzi (*fenestralis*, Macq.).
subperspicillaris, sp. n.
incipiens, sp. n.
ternarius, sp. n.
caffer, Wied.
laetus, Loew.
50. *LITORRHYNCHUS*, Macquart.
corticeus, Bezzi.
 var. *corticalis*, Bezzi.
phloeochromus, Bezzi.
suberosus, sp. n.
siccifolius, sp. n.
- macropterus*, Loew (*longipennis*, Loew).
basalis, Ric.
evanescens, Bezzi.
ricardoae, Bezzi.
dentiferus, Bezzi.
-
- maurus*, Thunbg. (*collaris*, Macq.; *rostratus*, Loew).
pseudocollaris, sp. n.
hamatus, Macq.
-
- infuscatus*, sp. n.
tollini, Loew.
nyasae, Ric.
argyrolepis, Bezzi.
-
- repletus*, Bezzi.
metapleuralis, sp. n. (*tollini*, Bezzi).
perplexus, Bezzi.
dilatatus, Bezzi (*rostratus*, Bezzi).
erythraeus, Bezzi.
 var. *productus*, n.
 var. *allothyris*, Speis.
 var. *suspensus*, n.
 var. *obumbratus*, n.
51. *EXOPROSOPA*, Macquart.
- A. *Heteralonia*, Rondani.
oculata, Macq. (*occulta*, Rond.).
- B. *Metapenta*, subgen. n.
corvina, Loew.
reticulata, Loew.
dubia, Ric.
pentata, Macq.
clathrata, Bezzi.
cadicerina, sp. n.
- C. *Acrodisca*, subgen. n.
fimbriatella, Bezzi.
offuscata, Bezzi.
haustellata, sp. n.
personata, Bezzi.
polyspila, sp. n.
angulata, Loew.
recurrens, Loew.
spoliata, sp. n.
-
- umbrosa*, Loew.
rubella, sp. n.
katonae, Bezzi.
pilimana, Bezzi.
violacea, sp. n.
suffusipennis, Bezzi.
- D. *Cladodisca*, subgen. n.
suffusa, Klug.
insularis, Ric.
serpentata, Loew.
- E. *Exoptata*, Coquillett.

* The Palaearctic species *V. circumdata*, Meig., and *V. hottentotta*, L., have been recorded from Sokotra.

- singularis*, Macq.
 F. *Trinaria*, Mulsant.
rutiloides, sp. n.
 G. *Defilippia*, Lioy.
villosa, sp. n. (*venosa*, Bezzi).
noctilio, Klug (*marginalis*,
 Walk.).
consanguinea, Macq.
biguttata, Macq.
compar, sp. n.
nigerrima, sp. n.
lugubris, Macq.
nigrifera, Walk.
-
- dolichoptera*, sp. n.
neurospila, Bezzi.
venosa, Wied.
nigrovenosa, Bezzi.
terminus, Walk.
maculosa, Wied.
maculifera, Bezzi.
convivens, sp. n.
-
- curvicornis*, sp. n.
senegalensis, Macq.
praeifica, Loew.
strenua, Loew.
arcuata, Macq.
-
- exigua*, Macq. (*tenuis*, Macq.).
hirtipes, Loew.
eclipsis, sp. n.
-
- flavicans*, sp. n.
-
- lepidogastra*, Bezzi.
mydasiformis, sp. n.
 H. *Pterobates*, subgen. n.
apicalis, Wied. (*pennipes*,
 Macq.).
 I. *Exoprosopa*, s. str.
pusilla, Macq.
formosula, Bezzi.
jacchoides, Bezzi.
-
- nemesis*, Fabr. (*nox*, Walk.).
 ? *notabilis*, Macq.
decipiens, sp. n.
-
- fuscescens*, Bezzi.
morosa, Loew.
ignava, Loew.
seniculus, Wied.
fastidiosa, sp. n.
hypargyra, Bezzi.
elongata, Ric.
rectifascia, sp. n.
argentifrons, Macq.
scaligera, Bezzi.
scalaris, sp. n.
-
- capensis*, Wied.
loewiana, sp. n.
madagascariensis, Macq.
-
- infumata*, sp. n.
obtusa, sp. n.
protuberans, sp. n.
eluta, Loew.
heros, Wied. (*caffra*, Macq.).
dux, Wied.
-
- sigmoidea*, Bezzi.
retracta, sp. n.
contorta, Bezzi.
restricta, Bezzi.
rufina, Bezzi.
clausina, sp. n.
albofimbriata, sp. n.
angusta, sp. n.
dimidiata, Macq.
rubescens, sp. n.
nigritella, sp. n.
discriminata, Bezzi.
grisea, Bezzi.
diluta, sp. n.
stenomelaena, sp. n.
hyalodisca, Bezzi.
luctifera, Bezzi.
dilatata, Bezzi.
argyrophora, Bezzi.
tuckeri, Bezzi.
-
- punctulata*, Macq. (*rara*, Loew).
nova, Ric.
triplex, sp. n.
perpulchra, sp. n.
tricolor, Macq.
orientalis, var. n.
robertii, Macq.
acrospila, Bezzi.
gentiles, sp. n.
melanaspis, sp. n.
nigrispina, sp. n.
nigrina, sp. n.
indecis, Walk.
parvula, nom. n. (*parva*, Ric.).
unifasciata, Ric.
punctifrons, sp. n.
palustris, sp. n.
stannusi, Bezzi.
capnoptera, Bezzi.
fuscula, sp. n.
aurulans, sp. n.
albata, sp. n.
novaeformis, var. n.
costalis, Macq.
major, Ric.
inaequalipes, Loew.
conochila, sp. n.
batrachoides, Bezzi.
decolor, sp. n.

latifrons, sp. n.
villaeformis, Bezzi.
merope, Wied.
pallida, sp. n.

aegina, Wied. (*bovei*, Macq.;
ferruginea, Klug).
suavipennis, Macq.
mucorea, Klug.
olivierii, Macq.

poeciloptera, sp. n.
balioptera, Loew.
cosmoptera, sp. n.
 ? *guttipennis*, nom. n. (*puncti-*
pennis, Ric.).

tabanoides, sp. n.
schmidtii, Karsch.
referta, sp. n.
linearis, sp. n.
goliath, sp. n.
busiris, Jaenn.
atrinasis, Speis.
magnipennis, sp. n.
brevinasis, sp. n.
spectrum, Speis.
thoracica, sp. n.
mesopleuralis, sp. n.
albonigra, sp. n.
penthoptera, Bezzi.
luteicosta, Bezzi.
cervina, Bezzi.
fissicornis, Bezzi.
temnocera, Bezzi.

inermis, Bezzi.
pediformis, sp. n.

decrepita, Wied.
inornata, Loew.
famula, Bezzi.
serva, sp. n.
heterocera, Bezzi.
erronea, sp. n. (*minois*, Bezzi).
brachycera, sp. n.
ancilla, sp. n.
chionca, sp. n.
hypomelaena, Bezzi.
latissima, sp. n.
chrystallina, sp. n.
parvicellula, Bezzi.
anus, Wied.
vetula, Wied.
paupera, Walk.

52. *HYPERALONIA*, Rondani.*

niveifrons, Bezzi.
evanida, Bezzi.
nigripennis, Loew.
coleoprata, Bezzi.
vittata, Ric.
paris, Bezzi.
helena, Loew (*gloriosa*, Walk.).

atricosta, sp. n.
sisyphus, Fabr.
alula, Bezzi.
monacha, Klug.
virgo, sp. n.
erebus, Walk.
transiens, sp. n.
mars, Walk.
thyridophora, Bezzi.

mars, sp. n.
vulcanus, subsp. n.
venus, Karsch.
cupido, sp. n.

PART II.—SYSTEMATIC.

THE following pages contain descriptions of the genera and species of Ethiopian Bombyliidae which have come under my observation. The respective groups, subfamilies and genera may be distinguished as follows:—

- 1 (66). Hind border of the eyes not indented, usually absolutely entire, or very rarely with a deep sinuosity; eyes destitute of a bisecting line, or such division, if present, due to the larger size of the upper facets; ovipositor usually destitute of spines; wings with a short praefurca and with the 2nd longitudinal vein originating at an acute angle (*Bombyliidae Homoeophthalmae*).
- 2 (57). Occiput flat, or only very slightly prominent, not bilobate above and destitute of a deep central cavity; occipital fringe typically placed near the border of the eyes; antennae as a rule approximate at base.

* *Anthrax rufa*, Wied., belongs to the genus *Lomatia*; "*Bibio*" *sphinx*, Fabr., is exclusively oriental.

- 3 (56). Prothorax not specially developed, and not beset with long and strong macrochaetae.
- 4 (55). Metasternum not specially developed; abdomen not very slender and never pedunculate; eyes of the female wider apart than those of the male.
- 5 (26). Tibiae beset with well-developed spicules, arranged in three longitudinal rows; proboscis long; palpi always one-jointed; body with bristles.
- 6 (23). Abdomen broad, ovate or rounded; antennae approximate at base (*Bombyliinae*).
- 7 (18). First posterior cell closed at end; basal comb of the wings usually well developed; metapleura usually hairy.
- 8 (15). First posterior cell closed by third longitudinal vein, which ends in costa; basal comb developed.
- 9 (12). First basal cell longer than second.
- 10 (11). Three submarginal cells present. *Triplasius*, Loew.
- 11 (10). Only two submarginal cells present. *Bombylius*, L.
- 12 (9). First basal cell as long as second.
- 13 (14). Face prominent, moderately pilose; discoidal cell shaped as in preceding genus; frons of male narrow. *Systoechus*, Loew.
- 14 (13). Face rounded and densely pilose; discoidal cell very obtuse at end; frons of male broad. *Anastoechus*, O. S.
- 15 (8). First posterior cell closed by fourth vein, which ends in costa; basal comb small or wanting.
- 16 (17). Hind border of eyes with a deep sinuosity; metapleura hairy; hind femora spinose below. *Eurycarenum*, Loew.
- 17 (16). Hind border of eyes entire; face bare and shining; metapleura bare; hind femora without bristles below. *Sisyrophamus*, Karsch.
- 18 (7). First posterior cell open; wings with no distinct basal comb; metapleura usually bare.
- 19 (20). Only two submarginal cells present. *Dischistus*, Loew.
- 20 (19). Three submarginal cells present.
- 21 (22). Third antennal joint quite bare above. *Adelidea*, Macq.
- 22 (21). Third antennal joint beset with long hairs above.
- Sosiomyia*, Bezzi.
- 23 (6). Abdomen elongate, cylindrical; antennae as a rule separate at base (*Cythereinae*).
- 24 (25). First posterior cell broadly open; antennae separate, with first joint simple. *Glossista*, Rond.
- 25 (24). First posterior cell closed and stalked; antennae approximate at base, with first joint thickened and tuberculate beneath.
- Oniomyia*, Bezzi.
- 26 (5). Tibiae bare, or only pilose, destitute of rows of distinct spicules; if sometimes spicules are distinct, palpi are two-jointed; body not bristly.
- 27 (38). Cubital fork widely open; body short and broad; head often of an unusual breadth (*Usinae*).
- 28 (33). Face provided with a circular brush of hairs, or at least with a trace of it; squamae with a long fringe; body very pilose; plumula usually distinct.
- 29 (32). Proboscis long; third antennal joint dilated at end; facial brush well developed.
- 30 (31). First antennal joint more or less elongate, cylindrical; antennae inserted near upper border of facial brush. *Corsomyza*, Wied.
- 31 (30). First antennal joint short and swollen; antennae inserted near middle of facial brush. *Callynthrophora*, Schin.
- 32 (29). Proboscis shorter than mouth opening; facial brush less developed; antennae placed at its upper border, with first joint short and thick and third joint linear. *Gnumyia*, Bezzi.
- 33 (28). Face destitute of circular brush; squamulae with a short fringe or nearly bare; body nearly bare.

- 34 (35). Antennae with first and second joints of about equal lengths, and with third joint provided at end with a tuft of hairs; second longitudinal vein strongly curved at end. *Psitholasius*, Beck.
- 35 (34). Antennae with first and second joints of different lengths, and with third joint bare at end.
- 36 (37). Antennae inserted near mouth, with third joint very thick; palpi sometimes thick and short. *Hyperusia*, gen. n.
- 37 (36). Antennae far from mouth, with first joint much longer than second, and with third joint slender; palpi long and thin. *Megapalpus*, Macq.
- 38 (27). Cubital fork narrow or only slightly widened; if fork is broad, body is narrow and elongate, or head is not specially developed; second longitudinal vein straight.
- 39 (42). Third longitudinal vein not forked; discoidal cell open; palpi rudimentary, one-jointed; very small species, with black and yellow markings (*Cyrtosiinae*).
- 40 (41). Second longitudinal vein present; ambient vein complete. *Cyrtosia*, Perr.
- 41 (40). Second longitudinal vein absent; ambient vein incomplete. *Empidideicus*, Beck.
- 42 (39). Cubital fork present; second longitudinal vein straight to end; anal cell typically closed (*Phthiriinae*).
- 43 (50). Ambient vein complete.
- 44 (49). Four posterior cells present; palpi two-jointed.
- 45 (46). Cubital fork broad; anal cell open; tibiae with three distinct rows of spicules. *Gonarthrus*, Bezzi.
- 46 (45). Cubital fork narrow, anal cell closed; tibiae with less distinct spicules or with none at all.
- 47 (48). Face hairy; third antennal joint longer than first; eyes of male united. *Crocidium*, Loew.
- 48 (47). Face bare; third antennal joint shorter than first; eyes of male separated. *Apatomyza*, Wied.
- 49 (44). Only three posterior cells present; palpi one-jointed; first antennal joint longer than third. *Pseudoamictus*, Big.
- 50 (43). Ambient vein incomplete, ending at apex of anal vein.
- 51 (52). Four posterior cells present; discoidal cell complete; face bare; third antennal joint at end with lateral style; palpi one-jointed. *Phthiria*, Meig.
- 52 (51). Three posterior cells only.
- 53 (54). Discoidal cell closed; third antennal joint acute at end, with terminal style; palpi one-jointed. *Geron*, Meig.
- 54 (53). Discoidal cell open; third antennal joint obtuse at end, with lateral style; palpi two-jointed. *Apolysis*, Loew.
- 55 (4). Metasternum strongly developed; abdomen slender and pedunculate; eyes in both sexes united or nearly so; first antennal joint very long; body bare and devoid of macrochaetae; wings pedunculate (*Systropinae*). *Systropus*, Wied.
- 56 (3). Prothorax greatly developed, beset with strong and curved macrochaetae; body bent at an angle between thorax and abdomen; first antennal joint very long (*Toxophorinae*). *Toxophora*, Meig.
- 57 (2). Occiput prominent, bilobate above with a deep central cavity and with occipital fringe placed at border of latter; second longitudinal vein looped at end, or even recurrent; cubital fork broad; anal cell open; ambient vein complete; eyes of male separated (*Cyleniinae*).
- 58 (63). Ocelli well developed and disposed in an equilateral triangle; metapleura bare.
- 59 (62). Second longitudinal vein not recurrent, originating at a right angle; praefurca long; first posterior cell open; three submarginal cells present; first longitudinal vein with scale-like hairs at base; pulvilli absent; face with strongly developed lateral furrows; eyes of male separate.

- 60 (61). Only one marginal cell present. *Nomalonia*, Rond.
 61 (60). Three marginal cells present. *Henica*, Macq.
 62 (59). Second longitudinal vein recurrent, originating at an acute angle; praefurca short; first posterior cell closed; two submarginal cells only; first longitudinal vein bare; pulvilli long; face destitute of lateral furrows; eyes of male almost united. *Peringueyimyia*, Big.
 63 (58). Ocelli indistinct, or only anterior one present, rudimentary and isolated; metapleura hairy; second longitudinal vein originating at an acute angle; praefurca short; first longitudinal vein bare at base; pulvilli long.
 64 (65). Face indistinct, mouth opening being extended to base of antennae; two submarginal cells only. *Pantostomus*, Bezzi.
 65 (64). Face well developed and conically produced; sometimes three submarginal cells. *Tomomyza*, Wied.
 66 (1). Hind border of eyes indented; eyes with a distinct, if short, bisecting line, but facets not differentiated; occiput prominent, bilobate above, with fringe placed at border of its central cavity; antennae usually widely separate at base; praefurca generally long; proboscis usually short; ovipositor very often spinose (*Bombyliidae Tomophilthalmae*).
 67 (88). Second longitudinal vein originating before on proximal side of middle cross-vein, usually at an acute angle and at a considerable distance before it (only in one case opposite); antennae sometimes approximate at base (*Lomatiinae*).
 68 (71). Middle cross-vein very much beyond middle of discoidal cell; praefurca short; second longitudinal vein originating at an acute angle; antennae approximate at base; eyes of male separate; proboscis short and thick.
 69 (70). Face and frons very prominent; metapleura hairy; wing-membrane wrinkled; praefurca practically absent. ... *Antonia*, Loew.
 70 (69). Face and frons rounded; metapleura bare; wing-membrane smooth; praefurca short but distinct. *Lomatia*, Meig.
 71 (68). Middle cross-vein before, on, or only a little beyond middle of discoidal cell; proboscis short, with thick labella (except *Isotamia*).
 72 (77). Origin of second longitudinal vein acute and distant from middle cross-vein; wing-membrane wrinkled; face not prominent; antennae separate at base; eyes of male united; palpi (?) two-jointed; pulvilli rudimentary or developed.
 73 (74). Three submarginal cells; first posterior cell closed; pulvilli present. *Pteraulax*, Bezzi.
 74 (73). Two submarginal cells only; usually no distinct pulvilli.
 75 (76). First posterior and anal cell closed; pulvilli sometimes present. *Cononedys*, Herm.
 76 (75). First posterior and anal cell open; pulvilli sometimes distinct. *Aphoebantus*, Loew.
 77 (72). Second longitudinal vein originating at an obtuse angle, more or less close to middle cross-vein.
 78 (81). Face rounded, not prominent; third antennal joint broad at base, afterwards styliform and usually hairy at end; eyes of male separate; pulvilli developed.
 79 (80). Origin of second longitudinal vein rather distant from middle cross-vein, about half-way between it and base of praefurca; discoidal cell long. *Petrorossia*, Bezzi.
 80 (79). Origin of second vein very near middle cross-veins; discoidal cell short. *Chionamoeba*, Sack.
 81 (78). Face prominent; third antennal joint conical, gradually tapering to a point and destitute of hairs at end; pulvilli rudimentary or distinct; eyes of male separate.
 82 (83). Proboscis long; middle cross-vein a little beyond middle of discoidal cell; three submarginal cells; marginal and submarginal cells very broad. *Isotamia*, Bezzi.

- 83 (82). Proboscis short; middle cross-vein on or before middle of discoidal cell; marginal and submarginal cells not very broad.
- 84 (87). Origin of second longitudinal vein before middle cross-vein; wing-membrane wrinkled; pulvilli distinct.
- 85 (86). Three submarginal cells; antennae rather widely separated at base. *Stomylomyia*, Big.
- 86 (85). Two submarginal cells; antennae approximate at base. *Plesiocera*, Macq.
- 87 (84). Second vein originating opposite middle cross-vein; wings smooth; pulvilli rudimentary; abdomen cylindrical; squamae with hairy fringe. *Chiasmella*, gen. n.
- 88 (67). Second longitudinal vein commencing exactly opposite middle cross-vein, or nearly so, at an obtuse angle, third longitudinal vein being in same straight line as praefurca; antennae always separate at base; proboscis usually short.
- 89 (94). Antennae with first joint short, and with the styliform part of third joint bisected and provided with a pencil of hairs at end; metapleura bare; squamae and alula fringed with hairs of usual kind; male genitalia greatly developed and placed symmetrically; female ovipositor with a tuft of hairs, not spinose; face always rounded, not prominent; proboscis always short; ocelli placed near the vertex; pulvilli present; front legs long, with tibiae beset with spicules; wing-membrane, wrinkled (*Anthracinae*).
- 90 (93). Abdomen bearing scales and bristles; no cross-vein between branches of cubital fork; first posterior cell always open.
- 91 (92). Third antennal joint broader than second, and with its margin produced; abdomen of male silvery at end; only two submarginal cells; upper branch of cubital fork irregularly curved; middle cross-vein on or beyond, rarely before, middle of discoidal cell; wings with a broad black pattern, often half black, half hyaline. ... *Anthrax*, Scop.
- 92 (91). Third antennal joint globular, inserted into cup-shaped second joint, and not broader than latter; abdomen with white scales, but in male devoid of silvery apical patch; two or three submarginal cells; upper branch of cubital fork regularly curved, middle cross-vein much before middle of discoidal cell; wing pattern reduced to isolated dark spots on cross-veins and bifurcations. *Spongostylum*, Macq.
- 93 (90). Abdomen devoid of bristles and of scales; branches of cubital fork united by a cross-vein as in *Hyperalonia*; first posterior cell closed and provided with a long stalk. *Dicranoclista*, gen. n.
- 94 (89). Antennae with first joint long, and with third joint not bisected, and destitute of a terminal pencil of hairs; metapleura hairy; squamae, alula and base of axillary lobe fringed with broad, flattened, scale-like hairs; male genitalia small and asymmetrically placed; female ovipositor with a terminal circlet of spines; pulvilli usually wanting (*Exoprosopinae*).
- 95 (104). Two (very rarely three) submarginal cells only; antennal style mostly not divided by a suture; ocelli placed more or less close to vertex; claws usually without basal tooth, or at most with a small and obtuse tubercle.
- 96 (103). Front tibiae beset with spicules; proboscis shorter than oral cavity, retracted; with fleshy labella; third posterior cell long.
- 97 (102). Face rounded, not prominent and never very convex; origin of second longitudinal vein exactly opposite middle cross-vein; third antennal joint globular, quickly tapering into a long, thin, filiform style.
- 98 (101). Mouth opening, as also proboscis, developed as usual; facial plate shorter than frons, and not separated from joints, which are linear; thoracic macrochaetae well developed; second basal cell not dilated; wings as long as body.
- 99 (100). Very like *Anthrax* in general appearance, colour and wing-pattern; pulvilli sometimes developed; metapleural fringe sparse; wings with small basal comb; discoidal cell outwardly obtuse. *Hemipenthes*, Loew.

- 100 (99). Flies of different aspect, usually with hyaline wings; pulvilli wanting; metapleural fringe dense; wings with basal comb of larger size; discoidal cell outwardly acute. *Villa*, Lioy.
- 101 (98). Mouth opening very small, proboscis rudimentary; facial plate very long and broad, as long as frons, rounded, separated from jowls, which are likewise broad, by a deep furrow; thoracic macrochaetae absent; second basal cell short and dilated; wings shorter than body.
Oestranthrax, gen. n.
- 102 (97). Face bluntly convex and very prominent; second vein originating before middle cross-vein; third antennal joint gradually tapering into a not very slender point; pulvilli present. *Synthesia*, Bezzi.
- 103 (96). Front tibiae smooth; pulvilli wanting; face conically produced or bluntly convex, but always prominent in profile; proboscis as long as oral opening, whence it protrudes; third antennal joint shaped like a more or less elongate cone, gradually tapering into fairly stout point; third posterior cell very often short. *Thyridanthrax*, O. S.
- 104 (95). Three or four submarginal cells present; third antennal joint in shape like an elongated cone, usually with style divided from it by a distinct suture; oceller tubercle a long way from vertex; claws generally with a distinct basal tooth, which is long and sharp.
- 105 (108). Three submarginal cells only, branches of cubital fork not being united by a cross-vein; claws with a long and sharp basal tooth.
- 106 (107). Face rounded, not at all projecting; proboscis longer than oral cavity and projecting; wings with peculiar neurulation and pattern; front tibiae beset with spicules. *Litorrhynchus*, Macq.
- 107 (106). Face usually conically produced, but sometimes rounded; proboscis short, not longer than oral cavity and not projecting; front tibiae generally smooth; wing pattern very variable or even absent.
Exoprosopa, Macq.
- 108 (105). Four submarginal cells, branches of cubital fork being united by a cross-vein; claws with a short, blunt basal tooth.
Hyperalonia, Rond.

DESCRIPTIONS OF SPECIES.

A. BOMBYLIIDAE HOMOEOPHTHALMAE.

Subfamily I. BOMBYLIINAE.

Genus 1. **BOMBYLIUS**, Linné (1758), incl. *Triplasius*,
Loew (1855).

More species of the genus *Bombylius* are included in the Ethiopian fauna than was previously believed. They are especially abundant in the extreme south of the continent, and it seems that there are some groups of species such as *Bombylius lateralis*, *B. analis*, *B. ornatus*, *B. mundus*, *B. mollis*, *B. micans* and *B. senex* which are peculiar to Africa.

In the following pages I have arranged the species in a series of higher groups, corresponding to those established in 1855 by Loew, who has written the only extensive paper on the genus; these groups, however, can be divided into smaller and more natural sections. Nevertheless, I have not accepted the genus *Triplasius* as valid, since its type species is evidently congeneric with *B. lateralis*, Fabr., notwithstanding the possession of three submarginal cells.

According to the system usually adopted, the higher groups may be distinguished as follows:—

- 1 (8). Tibiae with regular longitudinal rows of spicules, usually three rows on front pair, and four rows on remainder.
- 2 (7). Hind femora always spinose beneath, often right to base; antennae rather close together at base, with first joint not thickened; basal comb on wings more or less developed, often very large.
- 3 (6). Eyes of male touching, or, if narrowly separated as an exception, their inner margins parallel above; pulvilli larger or smaller, but always well developed; no strong bristles on head or fore part of thorax; third antennal joint usually short and but little attenuate at end; wings with basal comb small, and with discoidal cell usually more or less acute outwards.
- 4 (5). Pubescence on body and head mainly black, at least on abdomen (except *B. auricomus*); there are usually also silvery spots of scaly hairs.Group *ater*, *sens. lat.*
- 5 (4). Pubescence on body and head yellowish or greyish, black hairs on abdomen being very scarce and present only at end and on sides; no distinct silvery spots, or such spots very rarely present on frons only.Group *minor*, *sens. lat.*
- 6 (3). Eyes of male always separated, and their inner margins not parallel above; pulvilli very small, nearly wanting; stout bristles on head and in front of thorax; third antennal joint long and very attenuate at end; wings with very large basal comb, and with discoidal cell truncate, very obtuse outwards.Group *micans*, *sens. lat.*

- 7 (2). Hind femora not spinose beneath, only clothed with long hairs, or rarely with a few very thin spines at end; antennae distinctly separate at base, with first joint obviously thickened; wings without, or with very small, basal comb; eyes of male more or less separate.

Group *senex*, *sens. lat.*

- 8 (1). Tibiae destitute of rows of spicules, and clothed with hairs of equal length; eyes of male in contact for a long distance; hind femora not spinose beneath; wings without basal comb; pulvilli wanting; claws toothed at base; abdomen adorned with broad red spots.

Genus * *Isocnemus*.

Group 1. *B. ater*, *sens. lat.*

The species of this group, which, as pointed out long ago by Loew, is an artificial one, are many in number, and may be divided into three sections, as follows:—

- 1 (2). Second longitudinal vein straight, but with a deep sinuosity before its end, while, on the other hand, upper branch of third vein commences almost at right angles with main stem, and is afterwards very bent; discoidal cell obtuse outwards; two or three submarginal cells; first antennal joint elongate and thickened; thorax adorned with whitish lateral stripes; tibiae yellow; wings half infuscated, half more or less transparent and spotted.Section *lateralis*.
- 2 (1). Second longitudinal vein not deeply sinuate at end, and upper branch of third much less rectangular, and less bent; discoidal cell narrowing to its outer extremity; two submarginal cells; no lateral stripes on thorax; legs entirely black; wings unspotted.
- 3 (4). Second longitudinal vein straight; discal cross-vein beyond middle of discoidal cell; first antennal joint very short; hind femora with very numerous spines below from base to tip; larger species, with stout, quadrate, short-haired body.Section *analis*.
- 4 (3). Second longitudinal vein distinctly indulating; discal cross-vein before middle of discoidal cell; first antennal joint elongate; hind femora with only a few spines before tip; smaller or very small species, with elongate body clothed with longer hair.Section *ornatus*.

Section A.—*B. LATERALIS* (genus *Triplasius*).

1. *Bombylius lateralis*, Fabricius (1805).

Two ♂ specimens, one from Cape Town (*R. Trimen*) and one from Simon's Town, October, 1893 (*P. de la Garde*, *R.N.*).

Neither in the present collection nor in that of the Cape Town Museum are there any specimens of *B. (Triplasius) bivittatus*, Loew (1855), of which, however, I have received an example from the Albany Museum, Grahamstown. *B. bivittatus* is closely allied to *B. lateralis*, but has three submarginal cells; the veinlet forming the supernumerary cell is, however, sometimes wanting, as pointed out by Miss Ricardo.† I therefore think it better to leave this species in the present section of *Bombylius*; or, if the genus *Triplasius* be accepted, according to the characters given in the table above, *B. lateralis* must also be placed in it.

* This new genus belongs to the *Usiinae*, but is recorded here on account of its very great resemblance to *Bombylius*.

† *Ann. and Mag. Nat. Hist.* (7) VII, p. 89 (1901).

According to Becker,* *B. bivittatus* has been met with at Tunis, but this seems to me very doubtful.

Section B.—B. ANALIS.

In this group the frons of the female is of only moderate breadth, and is distinctly narrowed behind.

Owing to the neururation of its wings, the European *B. ater*, L., belongs to this section, though the hind femora have only a few spines below. With *B. lugubris*, Loew, it forms a peculiar group; the discal cross-vein is situate on or before the middle of the discoidal cell, but the second longitudinal vein is not undulating as in the following section.

B. punctatus, Fabr., seems to belong to the present group, but the second longitudinal vein shows a faint sinuosity, thus forming a transition to section C. *B. fuscus*, Fabr., forms a special section by itself, but in the shape of the second vein and discoidal cell it shows the characters of section A.

I have not seen *B. fulvonotatus*, Wied., which according to the description seems to belong to the present section, and is distinguished from the other species by the presence of a series of spots of fulvous pile along the middle line of the abdomen in both sexes.

In the collection before me, there are at least five species, two of them represented only by females, which belong here. It is to be remarked that the two sexes in the present section are very differently coloured, the males having exclusively black hair on the thorax, and always having black-fringed squamae.

The species may be distinguished as follows:—

- 1 (10). Squamae fringed with black or dark brown hair.
- 2 (9). Males.—Thorax usually clothed with black hair (with a single exception).
- 3 (8). Thorax with entirely black hair; wings not infuscated towards middle.
- 4 (7). Abdomen with a transverse band of orange hair towards middle; wings without any yellowish tinge.
- 5 (6). Tip of abdomen with a large tuft of white hair. *bombiformis*, sp. nov.
- 6 (5). Tip of abdomen clothed with black hairs, which are only narrowly white at distal extremity. *bicoloratus*, sp. nov.
- 7 (4). Abdomen without central band of orange hair; wings with a distinct yellowish tinge.
- a (b). Discoidal cell obtuse outwardly; anal tuft on abdomen quite white. *analis*, Fabr.
- b (a). Discoidal cell acute outwardly; anal tuft bright orange. *haemorrhoidalis*, Bezzi.
- 8 (3). Thorax on front half with light fulvous hair; wings suffused with fuscous towards middle. *suffusus*, Walk.
- 9 (2). Females.—Head and thorax clothed with orange or white hair; thoracic and pleural bristles black.
- a (b). Hair on thorax and head bright orange; proximal two-thirds of abdomen orange, distal third white. *flagrans*, sp. nov., ♀.

* Zeitschr. f. syst. Hym. u. Dipt., VI. Jahrg., p. 113 (1906).

- ♂ (a). Hair on head and thorax white; abdomen entirely black, with a bright orange tuft at end. *haemorrhoidalis*, Bezzi, ♀.
- 10 (1). Females.—Squamae fringed with white hair; thorax and head clothed with white hair; pleural bristles sometimes white; abdomen at base black-haired.
- 11 (14). Pleurae below root of wings with long and distinct black bristles; abdomen tricoloured, with a band or with side tufts of orange hair.
- 12 (13). Abdomen black at base, yellow in middle, white at end; wings with yellow veins. *bombiformis*, ♀.
- 13 (12). Abdomen black at base, yellow on sides in middle, and at end clothed with black hairs which have white tips; wing veins black. *bicoloratus*, ♀.
- 14 (11). Pleurae with white bristles, or with indistinct ones; praesutural bristles with white tips; abdomen black and white without orange hair.
- 15 (16). Broad-bodied species of larger size; dorsum of thorax uniformly clothed with white hair; abdomen clothed with black hair on sides, and with a white tuft only at tip; venter usually clothed with black hair; wings with discal cross-vein beyond middle of discoidal cell, and with a distinct yellowish tinge. *analis*, ♀.
- 16 (15). Species of smaller size and with more elongate bodies; dorsum of thorax with three longitudinal stripes of black hair; abdomen with white hair even on sides, and at tip with a tuft of black hairs which have white ends; wings without yellowish tinge, and with discal cross-vein about on middle of discoidal cell. * *acroleucus*, Bezzi.

2. *Bombylius flagrans*, sp. nov.

A large, stout species, very distinct from any other owing to the bright orange hair on the thorax, and the dark brown fringes to the squamae in the female. Type ♀, a single specimen from the Nyasaland Protectorate, near Kisii, South Kavirondo, 12 May, 1911 (*Dr. S. A. Neave*).

♀. Length of body 14 mm.; wing-expanse 34 mm.

Head black, densely clothed with bright orange hairs, which are short even on occipital border; breadth of frons near ocelli equal to one-third of that of eye; face short; peristoma very narrow, bare, black, ferruginous behind. Antennae with basal joints black, clothed with orange hair; third joint wanting in case of type. Proboscis entirely black, 5 mm. long. Thorax deep black, entirely clothed, even on pleurae, with short, dense orange hair; only on pectus are there some tufts of black hair. The stout supra-alar and postalar bristles, as also the rather numerous mesopleural ones, are black. Scutellum like thorax, with stout, black, marginal bristles. Squamae blackish, with brownish-black fringes; halteres black. Abdomen black, proximal two-thirds clothed with orange hair, like thorax; apical third with white hair; there are no bristles. Venter black-haired, with orange tufts on sides and white tuft at end; genitalia with a very large and dense tuft of yellowish hairs. Legs entirely black, with black spines; pulvilli dark yellow a

* I described this species in the paper on the Bombyliidae of the South African Museum. The elongate body and the position of the discal cross-vein cause it to form a transition to section C; it is allied to *B. elegans*, Wied., but has a very different second longitudinal vein.

little shorter than black claws; hind femora with at least ten strong spines from base to tip. Wings hyaline, blackish at base to basal cross-veins; alula only slightly infuscated, with dark yellowish posterior fringe; basal comb black, well developed; veins entirely black, except that auxiliary vein is dark ferruginous at end. Upper branch of third vein not rectangular at base, forming a gentle curve; first posterior cell broad and short, rather obtuse outwards and with a long stalk; discoidal cell very acute outwards, its apical cross-vein being very short; second and third posterior cells short, half length of fourth cell.

NOTE.—A male specimen in the British Museum from Kenya Colony, Nairobi to Fort Hall Road, 4,500–5,000 ft., 21–31 Jan., 1911 (*Dr. S. A. Neave*), should, I think, be assigned to the present species. The pubescence of the entire body is pale yellowish, not orange, but this is probably due to some accidental cause.

The dimensions of this individual are the same as those of the female type, but the shape is more elongate. Head as in *B. analis* ♂, with black antennae and black proboscis; hairs on frons and face entirely black, those on occiput and chin yellowish; proboscis 6 mm. long. Thorax entirely clothed with yellowish hair, which is paler on pleurae; prealar macrochaetae black, those on pleurae below root of wings yellowish. Squamae blackish, with yellowish fringes which are of a much lighter colour than those of female, an unusual feature, but, I think, due to the specimen being, as I believe, discoloured. Scutellum black, reddish-brown behind, clothed like back of thorax, with yellowish bristles, which, however, are black at base. Abdomen entirely black, densely clothed with hair like that of thorax; venter with black hairs, which are whitish at tips. Legs and wings as in female type, but wings distinctly narrower, and therefore with a narrower first posterior cell; veins more yellowish.

3. *Bombylius bombiformis*, sp. nov.

The present and following species, which are perhaps only colour varieties of the same form, are certainly distinct from *B. analis* owing to the absence of a yellowish tint in the wings, and the presence of a broad transverse band of fulvous hair in the middle of the abdomen.

Type ♂ and type ♀ from N.-W. Rhodesia, Chilanga, 4,000 ft., 29 December, 1913, and 10 January, 1914 (*R. C. Wood*), the male caught on grass, the female hovering over a path; a second female specimen from Nyasaland, Mt. Mlanje, 25 March, 1913 (*Dr. S. A. Neave*).

♂♀. Length of body, 12·5–13·5 mm.; wing-expanse 29–30 mm.

Head black, in male entirely clothed with black hair, with exception of a few grey hairs on sides of frons and on face below; in female everywhere with whitish hairs; on occiput hairs are dense and short, and in female some short but strong black bristles are intermingled. Eyes of male in contact for a space distinctly longer than vertical triangle; which is almost bare, while in female there are bristly black hairs between ocelli. Antennae entirely black; third joint long, not widened at base, gradually tapering into a point, distinctly narrower in male than in female; stiff hairs on basal joints black in male, white

in female. Proboscis black, 6 mm. long. Thorax deep black, clothed with short but dense hair, which in female is grey and in male black, but viewed from above shows a dark ferruginous tinge; macrochaetae wholly black in both sexes, those below root of wing numerous and strong. Scutellum black like thorax, but with hind border broadly brown; hair black in both sexes and bristles on hind border likewise black. Squamae black in male, with similarly coloured fringes, in female with white fringes. Halteres black, with brownish knobs. Abdomen black, with rather long hair of same colour in both sexes. Base of abdomen clothed with black hair; then comes a transverse band of fulvous hair, followed by a narrow band of black hair, and finally a broad,



FIG. 1.—*Bombylius bombiformis*, sp. nov. ♀. $\times 2\frac{3}{4}$.

white-haired tip, which in male is rather less than one-half, and in female equal to one-third of length of abdomen. Venter black-haired, each lateral border with a tuft of fulvous hairs in middle, tip clothed with white hair. Legs entirely black, with black hair and spines; claws black, pulvilli yellowish; hind femora with a number of spines (12–15) below, covering whole length. Wings hyaline, with brownish-black bases; the veins yellowish, darkened towards end in female, but diffused yellowish tint seen in *B. analis* entirely absent; alula grey, posteriorly in male with brown in female with whitish fringe; basal comb strong and black, its base on dorsal face in female thickly clothed with white hairs. Neuration as in preceding species, but first posterior cell distinctly narrower and more acute outwards, especially in male.

4. *Bombylius bicoloratus*, sp. nov.

This species is distinguished from the foregoing by having the white tuft at end of the abdomen much reduced, and represented by black hairs with white tips.

Type ♂, type ♀ and one additional specimen from Nyasaland, Mt. Mlanje, 17 January to 1 April, 1913 (*Dr. S. A. Neave*).

♂♀. Length of body, 13–14 mm.; wing-expanse 28–30 mm.

A lengthy description is unnecessary, because the present species is almost identical with the preceding, differing only in the greatly reduced white apical tuft on the abdomen. The transverse band of bright orange hairs seems to be interrupted in the middle of the abdomen. The wing veins are darker than in the preceding species, and are nearly blackish in the male.

5. *Bombylius analis*, Fabricius (1794).

This well-known species is very constant in its characters and therefore the preceding forms cannot be considered as varieties of it.

In the consignment before me there are four specimens: one ♂ from Nyasaland, Mt. Mlanje, 10 October, 1913 (*S. A. Neave*); a second ♂ from Kenya Colony, Moyale, 16 December, 1911 (*Dr. J. R. H. Chell*); one ♀ from N. Territories, Gold Coast, Diari, 17 March, 1913 (*J. J. Simpson*); and a male from Natal, Howick (*J. P. Cregoe*).

6. *Bombylius haemorrhoidalis*, Bezzi.

Ann. S. Afr. Mus., XVIII, p. 9 (1921).

Near *B. analis*, but distinguished by greater size, bright fulvous anal tuft and black fringed squamae in female.

Described by me from a ♂ from Mashonaland (Salisbury). The British Museum possesses one ♂ and five ♀♀ from the Nyasaland Protectorate, Blantyre, April 1909–1911 (*Dr. J. E. S. Old*); a second ♂ from Nyasaland, Mt. Mlanje, 16 April, 1913 (*Dr. S. A. Neave*); and two ♀♀ from S. Rhodesia, Chirinda Forest (*C. F. M. Swynnerton*).

The ♀, as yet undescribed, apart from the separation of the eyes, agrees with the ♂ in general appearance.

Section C.—B. ORNATUS.

The species belonging to this section are characteristic of the Ethiopian fauna and are rather numerous. The Palaearctic *B. ambustus*, Wied., which is closely related to *B. elegans*, as already pointed out by Wiedemann, likewise belongs to this section, as does also the Oriental *B. maculatus*, Fabr.

The section may easily be recognised by means of the characters given in the table above. The frons of the female is as a rule distinctly broader than in the preceding section. The antennae

are very long, the first joint being almost as long as the third. The occiput always bears long hairs on its upper border. Characteristic for the section is also the ornamentation of silvery spots on the head, and especially on the thorax in the female.

The known Ethiopian species may be distinguished as follows :—

- 1 (6). Black pattern at base of wings extended to discal cross-vein; alula very long and narrow, with dark fringe.
- 2 (3). Squamae in both sexes with silvery fringe; third antennal joint narrow, bifurcated at end, style being placed laterally; thorax with yellowish hairs in front and with a white metapleural tuft; wings broad, with rather less than basal half uniformly black, and remainder wholly hyaline. *argentatus*, Fabr.
- 3 (2). Squamae with black fringe in both sexes; third antennal joint very broad, with usual terminal style; thorax black-haired in front, and with no distinct white metapleural tuft; wings narrow, with basal black pattern limited to fore border, axillary and anal cells being in part hyaline.
- 4 (5). From basal black area in wings is emitted a curved prolongation, which runs along sixth longitudinal vein and reaches hind margin. *delicatus*, Wied.
- 5 (4). No trace of such a prolongation. *mutilatus*, Bezzi.
- 6 (1). Black basal pattern very narrow, usually occupying extreme base only, and at any rate not extending beyond basal cross-veins; third antennal joint always narrow and always simple.
- 7 (22). Abdomen without abundant fulvous or yellowish hair on sides, wholly black-haired with or without silvery tufts.
- 8 (13). Squamae of male always black-fringed, those of female with black or with silvery fringes; base of wings broadly black, without yellow areas; alula narrow and long, black or blackish, with a dark fringe; metapleural tuft black or dark, rarely fulvous.
- 9 (12). Squamae black-fringed in both sexes; thorax of female without silvery spots on sides; hind border of eyes in female without silvery spot in middle, or with a very small one.
- 10 (11). Frons of male without usual silvery spots above; silvery hairs on face greatly reduced in both sexes; thorax of female unspotted; hair on body very long; wing veins black. *plorans*, sp. nov.
- 11 (10). Frons of male with usual silvery spots above; face more extensively clothed with silvery hairs; thorax of female with a broad spot of fulvous hair on humeri; hair on body short; wings with yellow veins and acute discoidal cell. *lugens*, sp. nov.
- 12 (9). Squamae of female with silvery fringes; thorax in female with four silvery spots; borders of eyes in female with a broad silvery patch behind; discoidal cell outwardly obtuse. *nigrilobus*, sp. nov.
- 13 (8). Squamae in both sexes with silvery or luteous fringes; base of wings usually narrowly blackened, with more or less extensive yellowish areas; alula short and broad, usually yellowish or whitish, rarely infuscated; metapleural tuft white and very striking; thorax in female always with silvery spots, even before scutellum.
- 14 (15). Wings broadly infuscated at base, without yellow areas; alula dark or even blackish, with a dark fringe; occipital hair dense and fulvous; plumula fulvous. *fuscilobus*, sp. nov.
- 15 (14). Wings yellowish at base, only extreme base blackened; alula greyish or whitish, with white or pale fringe; plumula white.
- 16 (17). Abdomen of male on sides of fourth segment with a tuft of long silvery hairs, which are as long as black ones; female with dense fulvous hair on occiput, sides of thorax and pleurae; wings usually blackened at base in first costal and first praebasal cell.
- a* (b). Pleurae of male clothed entirely with black hair. *ornatus*, Wied.
- b* (a). Pleurae of male with fulvous hair. *pleuralis*, var. nov.

- 17 (16). Abdomen of male on sides of fourth segment with a tuft of silvery hairs which are much shorter than black ones; wings usually yellowish at base, even in praecostal and praebasal cells.
- 18 (21). Thorax and abdomen entirely destitute of scaly fulvous hairs beneath usual pubescence; black hair predominating on sides of thorax and on pleurae in females.
- 19 (20). Male with thorax in front and with scutellum clothed with pale hair, and without silvery stripes; wings at base black and yellow: larger species. *kilimandjaricus*, Speis.
- 20 (19). Thorax and scutellum in male entirely clothed with black hair, except that thorax in front has beginnings of two silvery stripes and two humeral spots; wings at base entirely pale yellowish: smaller species. *tripudians*, sp. nov.
- 21 (18). Thorax and abdomen with more or less dense fulvous scaly hair beneath usual pubescence; female with fulvous hair on occiput, on sides of thorax and on pleurae. *rufiventris*, Macq.
- 22 (7). Abdomen with large tufts of fulvous hair on sides, or entirely clothed with yellowish hairs; squamae in male with fulvous, and in female with silvery fringes.
- 23 (24). Abdomen mainly black-haired, with a broad tuft of fulvous hair on each side; wings at base broadly blackish, with dark and dark-fringed alulae. *furiosus*, Walk.
- 24 (23). Abdomen mainly clothed with yellowish hair; wings at base broadly fuscous, with greyish, yellow-fringed alulae. *auricomus*, sp. nov.

7. *Bombylius argentatus*, Fabricius (1805).

A species very distinct from any other owing to the shape of antennae and of the wing pattern. A ♀ specimen in the British Museum from N. Nigeria, S. Ilorin, Offa, June 1907 (*G. C. Dudgeon*), and one ♂ from Uganda, Kakindu, 3,400 ft., 24-25



FIG. 2.—*Bombylius argentatus*, Fabr. Antenna of ♂, dorsal side downwards. $\times 55$.

August, 1911 (*Dr. S. A. Neave*); further specimens (presented by Imperial Bureau of Entomology), from N. Nigeria, Zungeru, 1 November, 1910 (*J. J. Simpson*); Nyasaland, Bua River, 16 December, 1910 (*Dr. Old*); Uganda, Entebbe, 1 June, 1913, and 17 August, 1911 (*C. C. Gowdey*); and from Kenya Colony, Oyangi River, 9 June, 1911 (*J. Pugh*).

The third antennal joint in the present species is long and narrow, nearly linear; it ends obtusely, and bears the short style above and before its end, at a distance equal to the length of the style itself; the joint appears therefore to be bifurcate at the tip. This peculiar form probably requires the erection of a

new genus; the venation, however, is exactly the same as in typical *ornatus* section.

In 1910 Becker redescribed an entirely different species from Port Said under the present name, stating that the wings are black only at the extreme base, while Fabricius and Wiedemann write: *alis basi seminigris*.

The true *B. argentatus* seems to be more common in West Africa; it was originally described from Guinea, and I have specimens of both sexes from the Congo (Brazzaville). The coloration of the body and the disposition of the white spots are typical for the section, but the white tufts on the sides of the fourth abdominal segment of the male are short.

8. *Bombylius delicatus*, Wiedemann (1830).

Readily recognisable owing to the peculiar pattern of the black area at the base of the wings.

A pair in the British Museum, the ♂ from S. Africa, Annshaw (*Barrett*); the ♀ from Natal, Estcourt, September and October, 1896 (*Dr. G. A. K. Marshall, C. M. G., F. R. S.*); there are, moreover, specimens from Natal, Howick (*J. P. Cregoe*); from Kenya Colony, Embu, 27 February, 1913 (*G. J. O. Browne*); from Abyssinia, 14-17 October, 1911 (*R. J. Stordy*). Presented by the Imperial Bureau, there are specimens from Natal, Willow Grange (the late *R. C. Wroughton*).

9. *Bombylius plorans*, sp. nov.

A very dark species, distinguished from any other member of its group owing to the black-fringed squamae, and the great reduction of the silvery ornamentation.

Type ♂ and type ♀ in British Museum from Rhodesia, Chirinda Forest, 3,800 ft., 16 October, 1911 (*C. F. M. Swynnerton*); a further specimen from the Gold Coast, Aburi, 1913 (*H. W. Patterson*).

♂♀. Length of body 5·5-6 mm.; wing-expanse 17-18 mm.

Head black, entirely clothed with black hairs, which are distinctly longer than in allied species; in ♂ the two silvery spots on fore part of frons are wanting, and the two lateral spots on the face are very minute and hardly distinguishable below the long pubescence; in ♀ the frons becomes wider anteriorly, and shows two minute spots, one on each side, at level of root of antennae, while there are also two other minute dots below, on sides of face. Antennae entirely black, third joint as long as first, narrow and linear, with a thin terminal style; proboscis black, 3·5 mm. long. Thorax and scutellum entirely deep black, clothed with long hair, which forms a greyish band on fore border; in ♀ the band is replaced by a bright fulvous tuft on each side; there are no silvery spots or stripes in either sex. Squamae black and black-fringed in both sexes; a small tuft of white hairs above halteres, which are black. Abdomen deep black, with

very long black hair; in ♂, abdomen seems to be quite destitute of silvery ornamentation, while in ♀ there are some small tufts (three pairs ?) of white scaly hairs on sides, and venter shows narrow, silvery cross bands. Legs rather long and thin, entirely black, clothed with black spines and dark hairs; claws black, pulvilli dark; hind femora with two or three spines below on apical half. Wings rather long and narrow, with venation typical of the section; hyaline, but base from root to radical transverse veins blackish; alula also blackish, and provided with a black fringe, very long on hind border; second costal cell, and bases of the two basal cells and anal cell have a dark brownish tinge, chiefly in ♀. Veins black, auxiliary vein and base of costa yellowish; basal comb black, very small and short; vein at end of discoidal cell equal to one-third of small cross-vein in length.

NOTE.—Two additional females from Uganda (Nakasongola), 28 July, 1911 (*C. C. Gowdey*: presented by the Imperial Bureau of Entomology), agree with the above description in all the characters mentioned, but have the outer extremity of the discoidal cell ending in a point, there being no terminal cross-vein, and the second posterior cell being provided with a short stalk at base. On account of these features, and owing to the wing veins being paler, they perhaps belong to the following species.

10. *Bombylius lugens*, sp. nov.

Closely allied to the preceding species, but distinguished by the hairs on the head being shorter, and by the more extensive silvery ornamentation of the body.

Type ♀ from Ashanti, Kumasi, 21 October, 1907 (*Dr. W. M. Graham*); type ♂ from Sierra Leone, Ganya, 1 April, 1912 (*Dr. J. J. Simpson*: presented by the Imperial Bureau of Entomology).

♂♀. Length of body 6–7 mm.; wing-expanse 15–19 mm.

Head as in foregoing species, but with distinctly shorter hair; silvery spots on face broader; ♂ with two, ♀ with four silvery frontal spots. Thorax in ♂ with grey hair in front, with a few silvery ones intermingled; that of ♀ with commencement of two admedian longitudinal silvery stripes, and with a small spot of fulvous hairs on each humeral callus; bristles on thorax and scutellum black, well developed; no tuft of white hair on sides above halteres, but distinct traces of the spots before scutellum. Abdomen of ♂ as in preceding species; that of ♀ with lateral tufts of scaly hairs, and also with a median longitudinal series of small points on last segments. Legs as in foregoing, but spines on hind tibiae distinctly longer. Wings as in *B. plorans*, but with yellow veins, and in ♀ broader and shorter; discoidal cell tapering to a point at outer extremity, second posterior cell in ♀ with a short stalk at base.

11. *Bombylius nigrilobus*, sp. nov.

Very near the two preceding species, but smaller, and distinguished by the presence of a silvery fringe on the squamae in

the female, and a complete silvery ornamentation on the thorax in the same sex.

Type ♂, an additional specimen of same sex and type ♀ from N. Nigeria, Katagum, 19–30 July, 1907 (*Dr. J. M. Dalziel*); a ♀ specimen from S. Nigeria, Ibadan, 11 July, 1913 (*Dr. W. A. Lamborn*: presented by the Imperial Bureau of Entomology).

♂♀. Length of body 4–5 mm.; wing-expanse 12–15 mm.

Head black, with black hairs much shorter than in *B. plorans*; silvery frontal spots well developed in both sexes; silvery facial spots narrow in ♂, wider and almost coalescent in middle line in ♀. Antennae black, long, with black-haired basal joint; third joint distinctly longer than first, linear, a little broader in ♀, with a very minute terminal style; occipital hair in ♀ partly fulvous towards middle, and silvery occipital spots very broad. Proboscis black, 2.9–3.1 mm. long. Thorax and scutellum entirely deep black, clothed with blackish hair of medium length; a broad transverse band of greyish hair on fore border in ♂; in ♀ there are four silvery spots, two on each side, two short admedian longitudinal stripes, and two small praescutellar dots; pleurae black-haired, with no white tuft above halteres. Squamae black, in ♂ with black, in ♀ with silvery fringes; halteres black. Abdomen deep black and black-haired; a median longitudinal series of silvery spots in both sexes, and a series on each side, less developed or wanting in ♂, which has no tufts of white hairs on sides, but is entirely black-haired; venter black-haired. Legs entirely black, clothed with black spines and hairs; hind femora with four apical spines below; hind tibiae with long spines; ungues black, pulvilli pale. Wings hyaline, with yellowish veins and small black basal comb; base black so far as transverse veins, and even blackish to middle of basal cells; alula narrow, blackish and dark-fringed; neuration typical; discoidal cell with its distal extremity, obtuse, cross-vein dividing it from second posterior cell being as long as half or one-third of small cross-vein.

NOTE.—The present species, which seems to be exclusively West African, is sometimes confused with *B. ornatus*; thus the specimen taken at Dakar by Professor Silvestri* should be assigned to *B. nigrilobus*.

12. *Bombylius fuscilobus*, sp. nov.

This species is allied to the last, and has the bases of the wings similarly coloured, while, on the other hand, owing to the squamae in both sexes having silvery fringes, it forms a transition to the following species.

Type ♂, an additional specimen of same sex, type ♀ and two additional specimens from W. Africa, Ashanti, Obuasi, 31 May–26 September, 1907, hovering over flowers or on composite plants (*Dr. W. M. Graham*).

* *Boll. Lab. Zool. Portici*, VIII, p. 285 (1914).

♂♀. Length of body 5–6 mm.; wing-expanse 13–15 mm.

Head black and black-haired, occiput in both sexes clothed with fulvous hair, which is especially dense in ♂; hairs of medium length. Silvery spots rather small in both sexes, those of ♀ being only a little broader. Antennae long, black, black-haired at base, third joint a little longer than first, in ♀ distinctly broader, with a thin and short terminal style. Proboscis black, 3–4 mm. long. Silvery postocular patches wanting in ♂, small in ♀. Thorax and scutellum deep black, clothed with dark hairs, which viewed from in front are grey, while on sides they are decidedly fulvous, forming a broad and dense anterior band in ♂; silvery ornamentation in ♀ rather small but complete, consisting of four lateral spots, traces of two longitudinal stripes and two praescutellar dots; pleurae dark-haired, but with some fulvous hairs in ♀. Bristles black. Squamae black, with white fringes; metapleural tuft fulvous and rather well developed; halteres black. Abdomen deep black and black-haired, usual three longitudinal series of silvery spots present in both sexes; in ♂ lateral white tufts much shorter than black hair. Venter black-haired. Legs as in preceding species; hind femora with two or three spines. Wings perfectly hyaline, strongly iridescent, with yellowish veins and small black basal combs; base blackish to basal cross-veins, untinged, with yellow, but paler towards posterior margin; alula fuscous and dark-fringed; basal cells are completely hyaline. Neuration typical; discoidal cell acute at end, usually in contact with second posterior cell only at one point, but sometimes a very short cross-vein present.

13. *Bombylius ornatus*, Wiedemann (1828).

This common species is readily recognisable owing to the wings being black and yellow at the base; and in the ♂, the long tufts of white hairs on the sides of the abdomen form a further distinctive character. The female is characterised by the well-developed silvery ornamentation on face and thorax, and by the abundant fulvous hair on the occiput and fore part of thorax. The hind femora bear from five to six spines.

B. ornatus is widely distributed in Central and South Africa, but has hitherto been confused with the allied species, which are distinguished in this memoir.

In the collection before me, the species is represented by a number of specimens; the data with regard to which are as follows: South Abyssinia, Asuma, 26 October, 1911 (*R. J. Stordy*); Kenya Colony, Moyale, 24 March, 1912 (*Dr. G. R. H. Chell*), Mogorr R., May, 1913 (*A. O. Luckmann*); Nyasaland, Nakuru, January, 1913 (*Dr. B. L. van Someren*), Blantyre, 16 July, 1910 (*Dr. J. E. S. Old*), Mt. Mlanje, October–November, 1912 (*Dr. S. A. Neave*), Mzimba, May, 1909 (*Dr. H. S. Stannus*); Uganda Protectorate, L. George, 6 June, 1911 (*Dr. B. L. van Someren*); Natal, Willow Grange and Will Brook near Estcourt (the late

R. C. Wroughton); Durban, Umbilo, 8 December, 1913 (*L. Bevis*); Kenya Colony, Nairobi, 26 April, 1916 (*Dr. W. A. Lamborn*).

In addition to the foregoing there are a ♂ from Angola, Benguella, 1905 (*Dr. F. C. Wellman*), which is of greater size than usual, has the silvery facial spots less developed, and a rich reddish collar on thorax; a ♀ from E. Africa, Mombasa, 1906 (*A. J. Chalmley*); a ♂ from the Transvaal, 1906 (same collector), measuring 9–10 mm. in length, while the typical specimens are usually 6–8, rarely 9 mm. long; numerous specimens from Pretoria, 1914 (*Miss J. Brincker*); Uganda, W. Ankole, 4,500–5,000 ft., 10–14 October, 1911 (*Dr. S. A. Neave*); R. Rukuru, Karonga, October, 1913 (*A. G. Eldred*).

Var. pleuralis, var. nov.

A ♂ from Kenya Colony, Nakuru, January, 1913 (*Dr. B. L. van Someren*): presented by the Imperial Bureau of Entomology) is typical in every other respect, but has the pleurae adorned with broad tufts of fulvous hairs, while in the type they are entirely black-haired.

NOTE.—In the present species the discoidal cell varies in shape from pointed, the second posterior cell having a short stalk, to obtuse, the transverse vein between it and the above-named cell being as long as one-third of the middle cross-vein. The wing veins vary also in colour from yellow to dark brown.

14. *Bombylius kilimandjaricus*, Speiser (1910).

Allied to the preceding species, but distinguished by the body being more ovate, and also in the ♂ by the absence of the long white tufts on the sides of the abdomen, and in the ♀ by the occiput and thorax being destitute of fulvous hairs.

Some specimens of both sexes from Nyasaland, Mt. Mlanje, January to February, 1913, and November to December, 1912 (*Dr. S. A. Neave*: presented by the Imperial Bureau of Entomology). There are also two small ♂♂ (measuring only 6–6.5 mm. in length, while the species is usually 7–10 mm. long), and one ♀ from the Nyasaland Protectorate, 1909 (*Dr. S. K. Norris*).

The as yet undescribed ♀ is very like that of *B. ornatus*, and has the silvery ornamentation on head and thorax equally developed, the face being almost entirely silvery; the occipital patches are very broad, as are also the two spots near the ocelli; but the upper part of the occiput, and the pleurae and front of the thorax are black-haired, with no fulvous hairs whatever.

NOTE.—I am convinced that the present species is the same as that described by Wiedemann under the name of *Bombylius elegans*, chiefly because, as already stated by its author, it is very like *B. ambustus*. But since, according to Loew, Wiedemann's species belongs to the *micans* group, I prefer to use the name proposed by Dr. Speiser.

15. *Bombylius tripudians*, sp. nov.

A small and elegant species, distinguished from the two preceding ones by having the base of the wings entirely pale; from

the following one by the absence of fulvous scaly hairs on the body; and from all three species by having silvery spots and stripes on the front of the thorax.

Type ♂, a single specimen from Angola, 1873 (*Mrs. Monteiro*).

♂. Length of body 5 mm.; wing-expanse 14 mm.

Head black, clothed with rather long black hair; silvery, frontal spots well developed, the facial smaller than the frontal ones; occipital patch reduced to a point. Antennae rather short, third joint being as long as first, linear, with a minute terminal style. Proboscis black, 2 mm. long. Thorax and scutellum deep black, entirely clothed with black hair, which viewed from in front appears to be dark greyish; anterior border with beginning of four silvery longitudinal stripes, two near middle line, and one on each side near humeral callus; scutellum with some silvery scales at base; pleurae black-haired, but white metapleural tufts very distinct. Squamae black, with silvery fringes; halteres black. Abdomen black, with black hair and three rows of rather broad silvery stripes, which on second and fourth segments show a tendency to form complete transverse bands, but on sides of fourth are much shorter than black hair. Venter black-haired, with silvery lateral spots on terminal segments. Legs as in preceding species; hind femora with four spines. Wings hyaline, with typical neuration and yellowish veins; base pale brown, with no black areas; alula yellowish-grey, with pale fringe; terminal vein of discoidal cell half as long as middle cross-vein.

16. *Bombylius rufiventris*, Macquart (1846).

Very like the preceding species (*B. ornatus*, etc.) but distinguished by the entirely pale base of the wings, the greyish hair in front of the thorax in the ♂, and in both sexes by the more or less dense, fulvous, scaly hairs on the body, at least on the abdomen in the ♂.

This species seems to be common, but is often confused with *B. ornatus*, as was done by me in my previous work on Ethiopian Bombyliidae. There is a ♂ in the British Museum from Nyasaland, Fort Johnston, 1,500 ft., 11 January, 1906 (*E. L. Rhoades*).

17. *Bombylius furiosus*, Walker (1860).

In both sexes, this species is readily distinguishable owing to the broad tufts of bright fulvous hair on the sides of abdomen. *B. furiosus* is known only from South Africa, and the British Museum possesses a couple of specimens from Port Natal (*Gueinzius*) and a male from Delagoa Bay (*R. W. Plant*).

18. *Bombylius auricomus*, sp. nov.

Distinguished from any other species of the present group by the predominantly yellowish colour of the hair clothing the

entire body; the venation and the silvery ornamentation, however, are typical. Described by me in my paper on the Bombyliidae of the Museum of Budapest, from Abyssinian material. The British Museum possesses (ex. coll. Imp. Bur. Ent.) a couple of badly preserved specimens from S. Abyssinia (*R. J. Stordy*), and two ♂♂ from Nyasaland, Mt. Mlanje, 26 November, 1912, and 1 January, 1913 (*Dr. S. A. Neave*). The latter specimens are more robust, and the hair with which they are clothed is of a brighter fulvous tint, like that on *B. furiosus*. The Museum also possesses specimens from N. Nyasa, Florence Bay, 1 November, 1909 (*Dr. J. B. Davey*), and Natal, Durban (*J. P. Cregoe*).

A very small male specimen from N.-W. Rhodesia, Chilanga, 4,000 ft., 10 January, 1914, "on damp sand" (*R. C. Wood*) appears to belong to some allied species, in which the yellow hairs on the abdomen are interspersed with many black ones.

Group 2. *B. minor*, *sens. lat.*

This group, taken in its widest sense, is also very artificial; it would likewise appear that in the Ethiopian Region there are no species of the true *B. minor* section in its narrowest sense. I think it better to divide the present group into three sections, the first of which agrees with the *B. ater* group in having silvery spots on head and body; while in the last, as in the following group (*B. micans*), the pulvilli are smaller, and the eyes of the ♂ sometimes separate.

The three sections may be distinguished as follows:—

- 1 (2). Silvery frontal spots present in both sexes; abdomen with silvery scales at end; occipital hairs short; scutellum and spines on legs black.Section *B. modestus*.
- 2 (1). No silvery spots on frons, and no silvery scales at end of abdomen.
- 3 (4). Scutellum red (grey only in *B. globulus*); spines on legs yellow; occipital hairs long and dense; pulvilli larger; abdomen ovate, with seven broad segments visible from above; third antennal joint bare; wings not infuscated at base, with middle cross-vein on or after middle of discoidal cell.Section *B. mundus*.
- 4 (3). Scutellum and spines on legs black; occipital hairs short; pulvilli smaller; abdomen truncate at end, with only five broad segments visible from above, the terminal ones being narrow and bent downwards, forming a tail; third antennal joint often pubescent or pilose; wings usually blackish at base, with the middle cross-vein situate in proximal half.Section *B. nubilus*.

Section A.—*B. MODESTUS*.

In this small section there is a single South European species, *B. modestus* of Loew, which was found by Becker to be not uncommon in Egypt; *B. modestus* is allied to the yellow-haired species of the *B. ater-ornatus* group, like *B. auricomus*, but evidently belongs to the *B. minor* group.

19. *Bombylius modestus* var. *phaeopterus*, var. nov.

Distinguished from the typical form by having the wings decidedly infuscated. Described by me from Erythraea, in my paper on the Bombyliidae of the Hungarian Museum.

The British Museum possesses (presented by the Imperial Bureau of Entomology) a single ♂ from S. Abyssinia (*R. J. Stordy*), which measures about 9 mm. in length, and is therefore of a larger size than usual.

Section B.—**B. MUNDUS** (genus **Parisus**, Walker).

This seems to be a peculiar group of Ethiopian species, which in Africa perhaps replaces the true *B. minor* group, and probably represents the genus *Parisus* of Walker (1852). The species of this group are very numerous in the extreme South, and were therefore described by me in the paper on the Bombyliidae of the South African Museum; they are included in the synoptic table printed below. As characteristic features may be mentioned the small size and elongate body, as well as the colour of the scutellum and of the spines of the legs. The occipital hairs are dense and rather long, but do not include any long black hair.

- 1 (6). Proboscis entirely red with a black tip, or at least with the upper side red; middle cross-vein placed much before middle of discoidal cell; third antennal joint usually reddish.
- 2 (5). Scutellum red; frons in ♀ very broad; wings broadly reddish-yellow at base.
- 3 (4). First posterior cell broad and but slightly attenuate outwardly; discoidal cell broad; proboscis long; third antennal joint reddish.
- 4 (3). First posterior cell narrow and acute outwardly; discoidal cell very small; proboscis very short; third antennal joint black.
eurhinatus, Bezzi.
- 5 (2). Scutellum, like thorax, blackish-grey; wings entirely hyaline; frons in ♀ very narrow.*brachyrrhynchus*, Bezzi.
- 6 (1). Proboscis entirely black or only red below; middle cross-vein on or a little beyond middle of discoidal cell; third antennal joint usually black.*globulus*, Bezzi.
- 7 (8). Antennae entirely black; palpi black; femora broadly blackened at base; abdomen with rows of black hairs on hind borders of segments.
- 8 (7). Antennae partly or wholly red; palpi red; femora entirely yellowish-red; abdomen without rows of black hairs.
impurus, Loew.
- 9 (14). First posterior cell long, and exceedingly attenuate and acute outwardly, provided with a short stalk.
- 10 (11). Abdomen broadly red on sides; frons in ♀ of usual width; hair on body yellowish; third antennal joint short; proboscis red below.
mundus, Loew.
- 11 (10). Abdomen entirely blackish-grey; frons in ♀ much broader; hair on body grey; third antennal joint more elongate; proboscis quite black.
- 12 (13). Wings with veins darkened at end, a long discoidal cell, an almost sessile first posterior cell, and basal comb provided with long yellow bristles; first joint of antennae light yellowish,*sessilis*, Bezzi.

- 13 (12). Wings with veins entirely yellow, a short discoidal cell, a distinctly stalked first posterior cell, and bristles forming basal comb very short; first antennal joint blackened or black. *acutus*, sp. nov.
- 14 (9). First posterior cell of usual shape, blunt at end and always provided with a long stalk.
- 15 (18). Antennae entirely red; proboscis entirely black; scutellum not margined with black behind; abdomen entirely blackish grey.
- 16 (17). Wings with extreme base greyish hyaline; middle cross-vein situate on middle of discoidal cell. *xanthocerus*, Bezzi.
- 17 (16). Wings with extreme base deep yellow; middle cross-vein beyond centre. *luteipennis*, sp. nov.
- 18 (15). Antennae with third joint entirely black, and usually with second joint also black.
- 19 (20). Scutellum with broad black hind border; abdomen and proboscis entirely black. *marginellus*, Bezzi.
- 20 (19). Scutellum without black hind border.
- 21 (22). Very small species, with entirely black proboscis; abdomen red on sides or on the hind borders of segments. *paterculus*, Walk.
- 22 (21). Species of greater size; proboscis red below; abdomen entirely black.
- 23 (24). Head and end of abdomen with yellowish hair; face dark. *fucatus*, Bezzi.
- 24 (23). Head and end of abdomen with white hair; face yellow. *ruficeps*, Macq.

20. *Bombylius impurus*, Loew (1863).

Easily recognisable among the other species of this group with a red scutellum, owing to the entirely black antennae and proboscis, the broadly blackened femora, and the rows of blackish hairs on the hind borders of the abdominal segments.

Originally described from a ♂ from South Africa (Orange Free State) in my memoir on the Bombyliidae of the South African Museum. There is a ♂ in the British Museum from the Cape Province, Ingleside, Cradock, April, 1914 (*Miss J. Brincker*).

21. *Bombylius paterculus*, Walker (1852).

A small, compactly built species, characterised by a partly red abdomen and pale yellowish legs and wing veins.

The British Museum possesses a series of ♀♀, from the Cape Province, Cradock, January, 1915 (*Miss J. Brincker*), and Pretoria (same collector). This is an exclusively South African species, and the type of the genus *Parisus* of Walker.

22. *Bombylius acutus*, sp. nov.

A small, light-haired, delicate species, looking as though it were not a true *Bombylius*, chiefly on account of the head being very broad; it is, however, extremely closely allied to the South African species which I have described under the name *B. sessilis*.

Type ♂ from Arabia, Huswah, near Aden, 14 April, 1895 (*Capt.*, now *Lt.-Col.*, *C. G. Nurse*); type ♀ and an additional ♂ specimen from Perim I., Straits of Bab-el-Mandeb, 1890 (*Commander J. J. Walker, R.N.*).

The Arabian *B. miscens*, *B. nivifrons* and *B. exiguus*, described by Walker in 1871, may be identical with the present species,* in the case of the two former the scutellum is red while the femora are black.

♂♀. Length of body 8·8·5 mm.; wing-expanse spread 14–15 mm.

Head light yellow, but covered with a dense grey dust on occiput and on frons, noticeably broader than thorax, with mouth opening almost perpendicular and with very broad and flat sides; it is very slightly pilose, being clothed with sparse light hairs on sides of face. Frons in ♀ very broad, sparsely clothed with short pale hairs; occiput finely punctate with small black dots, and clothed below with dense white hairs. Eyes bare, somewhat larger than usual, in ♂ united above for a short distance and with facets forming upper half distinctly larger. Occipital hair short. Antennae with first and second joints blackish in ♂ and more or less yellowish in ♀, especially second joint, which is half as long as first; third joint black, slender and elongate, greatly attenuate at end and provided with a very thin style. Palpi yellow; proboscis entirely black, strong, 3·5 mm. in length. Thorax rather short and flat, entirely blackish-grey, clothed above and below with fine, dense white hair of moderate length; bristles whitish. Scutellum large, red, greyish pollinose, with a narrow black base, clothed with long whitish hair and provided with a row of long whitish bristles on hind border. Squamae light yellowish, white-fringed; halteres white, their knobs more or less yellowish. Abdomen oval, coloured like thorax, hind borders of segments narrowly yellow in ♀, while in ♂ yellow colour is absent or confined to lateral extremities of hind margins; abdomen clothed with long, soft, white hair, without any black bristles; venter with hind borders of segments more broadly yellow, and with long, white hair; ♂ genitalia yellow. Legs with coxae entirely pale yellowish, and with sparse white scales and hairs; hind femora with three or four yellow spines on underside of apical half; spicules on tibiae yellow; ungues yellow, with black tips; pulvilli narrow, rather long. Wings whitish-hyaline, with veins entirely yellow; basal comb yellow, its bristles shorter than broadened base of costal vein. Upper branch of third vein coming off from main stem nearly at a right angle; tip of first posterior cell forming an acute angle, provided with a short but distinct stalk furnished by distal extremity of lower branch of third vein; middle cross-vein on or very little beyond middle of discoidal cell, which is rather broad and short, and obtuse at end. Base of wing and alula wholly hyaline, latter with a short, pale fringe.

* *Bombylius miscens*, Walk., and *B. nivifrons*, Walk. var. *β*, belong to the genus *Anastoechus*, O. Sack.; the types of *B. exiguus*, Walk., and of *B. nivifrons*, Walk. (typical form) are not now to be found in the British Museum (Natural History).—E. E. A.

23. *Bombylius luteipennis*, sp. nov.

Very like the South African species *B. xanthocerus*, and perhaps the other sex of it; distinguished, however, by the wings being broader (a sexual character), and having their bases deep yellow. From *B. fucatus* the present species differs in the colour of the antennae and of the proboscis.

Type ♀ and an additional specimen of same sex from S. Abyssinia (*R. J. Stordy*: presented by the Imperial Bureau of Entomology).

♀. Length of body 8 mm.; wing-expanse 17 mm.

Head black, grey dusted, clothed on frons and face with rather long yellow hair; occiput with long hair of same colour, which is distinctly paler only below; frons of usual breadth. Antennae entirely yellow but with first and second joints paler, third joint being darkened and blackish on apical half, and rather short and broad at base; basal joint has yellow hair. Palpi yellow; proboscis 4 mm. long, entirely black. Thorax entirely clothed with yellowish hairs, without any dark ones, and with yellow bristles; hair on pleurae and breast paler; back black, with five distinct longitudinal stripes of grey dust, which are fused together forwards and abbreviated behind; middle stripe very narrow, dorsocentral and notopleural ones broader near suture. Scutellum entirely red, with black base and sides, clothed like thorax, and with marginal yellow bristles. Halteres white; squamae yellowish, with long yellow fringes. Abdomen, even on venter and hind borders of segments entirely black, completely clothed with rather long hair like that on thorax. Legs entirely pale yellow colour except last two joints of all tarsi, which are black; femora yellow-haired, those of the hind pair with from seven to eight very long yellow spines. Wings as in *B. xanthocerus*, but with base yellow as far as basal cross-veins; middle cross-vein beyond middle of discoidal cell; basal comb entirely yellow.

Section C.—*B. NUBILUS*.

This section was founded by Loew on the South European species *B. nubilus*, Mikan, and *B. pilirostris*, Loew; it seems to be well represented in the Ethiopian fauna, but is rare in the extreme south of the region. The species are very different in colour from those of the preceding group, chiefly on account of the black scutellum and the black spines on the legs; they have short occipital hair, without any long black hair; the third antennal joint and the proboscis are often pilose. Very characteristic is the shape of the abdomen, which is broad at the base, and abruptly truncated behind; in this character all the species agree, but in other respects they differ and can be divided into two distinct series, as will be seen from the following table. The first series is Mediterranean and Ethiopian, while the second is exclusively Ethiopian.

- 1 (10). Body with rough hair and destitute of golden pubescence; mystax mainly black; abdomen richly ornamented with long tufts of black and white hair; thorax with lateral bristles well developed; eyes in ♂ always united, and with facets of equal size; third antennal joint ciliated above; halteres with black knobs; first posterior cell obtuse and provided with a long stalk (series *B. nubilus*).
- 2 (3). Antennae reddish, or at least with third joint reddish; no black notopleural stripe; abdomen at end with only a broad tuft of white hair; wings less infuscated at base *erythrocerus*, Bezzi.
- 3 (2). Antennae entirely black; abdomen at end with alternating white and black tufts; wings more intensively infuscated at base and along fore border.
- 4 (7). No distinct notopleural stripe of black hair, even if a few black hairs are present on humeri or near bases of wings.
- 5 (6). Upper branch of third longitudinal vein abruptly bent at base, and usually provided with an appendix; first antennal joint with whitish hair below; wings with basal comb black but clothed with dense and very noticeable golden pubescence. *neithokris*, Jaenn.
- 6 (5). Upper branch not abruptly bent at base, nearly straight, uniformly parallel with alar border, and without appendix; first antennal joint with perfectly black hair; basal comb devoid of golden pubescence.
parallelus, sp. nov.
- 7 (4). Thorax with a broader or narrower, but always very distinct, notopleural stripe of black hair.
- 8 (9). Femora entirely yellow; antennae at base with pale hair; wings with black comb, and less infuscated at base. *terminatus*, Beck.
- 9 (8). Femora more or less black, at least at base; antennae black-haired at base; wings with golden pubescence on comb and with darker base. *femoralis*, sp. nov.
- 10 (1). Body clothed with soft hair and in addition with golden pubescence; mystax entirely yellow; abdomen with small and inconspicuous tufts of black hair; thorax without lateral bristles; eyes in ♂ with larger facets above and sometimes separated; third antennal joint bare above; halteres with whitish knobs; upper branch of the third longitudinal vein straight; first posterior cell usually elongate and pointed (series *B. mollis*).
- 11 (14). Eyes of ♂ united as in preceding group.
- 12 (13). Legs entirely black; wings deeply infuscated at base and along fore border. *melanopus*, sp. nov.
- 13 (12). Legs entirely yellow; wings at base with only a faint yellowish-brown tinge. *mollis*, Bezzi.
- 14 (11). Eyes of ♂ separated.
- 15 (16). First posterior cell long, acute at end and provided with a short stalk. *disjunctus*, sp. nov.
- 16 (15). First posterior cell short, obtuse at end and with a long stalk.
obtusus, sp. nov.

Series A. **B. NUBILUS.**

24. **Bombylius erythrocerus**, Bezzi (1906).

A male specimen from Belgian Congo, Katanga, Lualaba R., 4 May, 1907 (*Dr. S. A. Neave*). This species, of which the type was obtained in Erythraea, is easily distinguishable owing to the red third antennal joint.

25. **Bombylius neithokris**, Jaennicke (1867).

Distinguishable owing to the wings being strongly infuscated at the base, the absence of black notopleural hairs, and the

presence as a rule of an appendix to the upper branch of the third longitudinal vein. The present species was described by me in 1906 from *Erythraea* under the name *B. appendiculatus*, but I now think that it is identical with that described by Jaenicke from Abyssinia. The British Museum possesses a ♂ from Abyssinia, Chola, 15 October, 1904 (*Ph. C. Zaphiro*), and two ♀♀ of doubtful provenance, but probably from Kenya Colony (*S. W. J. Scholefield*); in addition, there is a series of ♂♂ and ♀♀ from S. Abyssinia, 1911 (*R. J. Stordy*: presented by the Imperial Bureau of Entomology). I have to add to my description of 1906: Length of body 9–10 mm.; of the proboscis 4·5–5 mm.; wing-expanse 23–25 mm. Third antennal joint rather long and thin, not dilated at base, $1\frac{1}{2}$ times as long as first two joints together, provided on upper border with some scattered black hairs, which seem to be caducous; black hairs on lower sides of face somewhat bristly; yellow hairs on middle of face abundant, and therefore mystax more yellowish than black; palpi and entire proboscis black. On thorax bristles on sides before suture are yellow, but postalar ones black; sometimes there are a few black hairs on humeric and at root of wings, but never forming a distinct notopleural stripe. In well-preserved specimens abdomen shows at tip, between black hairs, a tuft of white ones on each side. Spines on the hind femora rather long, usually eight or nine; claws black; pulvilli very short. Second longitudinal vein distinctly wavy; upper branch of third vein leaving main stem nearly at right-angles, and usually with an appendix (in over 80% of specimens examined); first posterior cell very obtuse at end, and with a long stalk; discoidal cell rather short and broad, obtuse at end, vein between it and second posterior cell being rather long; second posterior cell about twice as broad at end as third, but both of nearly equal length. Alula fuscous, with a dark fringe, which is longer and yellow at inner extremity of hind margin. Basal comb black, but clothed with dense golden pubescence.

The as yet undescribed ♀ closely resembles the ♂; frons of usual breadth for this sex, showing golden hairs between the black ones; third antennal joint densely pubescent above and below, with in addition usual cilia on upper side; between the yellowish hairs, there are on middle of thorax, on scutellum and on abdomen some erect fuscous or blackish hairs. Patch of hair above base of ovipositor golden-yellow.

NOTE.—The next three forms (*Bombylius parallelus*, *B. terminatus*, *B. femoralis*), and even *B. basifumatus*, are probably only varieties of the present species.

26. *Bombylius parallelus*, sp. nov.

Very near the preceding and perhaps only a form of it, but smaller and distinguished by the shape of the upper branch of the third longitudinal vein. In this last character it agrees

with *B. basifumatus*, Speiser (1914), from Cameroon, which, however, has a black notopleural stripe on the thorax.

Type ♂, and two additional specimens of same sex from Abyssinia, November, 1911 (*R. J. Stordy*: presented by the Imperial Bureau of Entomology).

♂. Length of body 7–8 mm.; wing-expanse 18–20 mm.

Head and its appendages as in preceding species; but hairs at base of antennae are black even below, and middle of face has fewer yellowish hairs. Thorax absolutely without any black hair. Legs and abdomen as in *B. neithokris*, but femora more or less darkened near base. Coloration of wings as in *B. neithokris*, but venation different: upper branch of third vein straight and parallel with wing-margin, not rectangular at base and entirely without an appendix; discoidal cell usually more acute at end, vein dividing it from second posterior cell being very short. Basal comb black, without, or sometimes with a very few golden hairs. Veins black even at base.

27. *Bombylius terminatus*, Becker (1910).

Near *B. neithokris*, but with a black notopleural stripe, and without an appendix to upper branch of third longitudinal vein.

Originally described from Nairobi, there are in the British Museum a ♂ and ♀ from Uganda, E. and S.-E. Ruwenzori, 3,500–13,000 ft., 29–31 January, 1906 (*Hon. C. Legge* and *A. F. R. Wollaston*); a ♂ from Kenya Colony, Embu-Meru Rd., 1 May, 1912 (*W. O. Prichard*); and a ♀, differing in some respects, from Kenya Colony, Mangat, 6 December, 1911 (*Dr. G. R. H. Chell*).

This form is the palest of the series; the sides of the mouth are broadly yellow; the basal joint of the antennae is clothed with pale hairs, even above; the palpi are yellow or yellowish; the third antennal joint in the ♀ is not pubescent, but shows only the usual cilia above. The basal comb on the wing is black as in *B. parallelus*, but in the ♀ it has rather abundant yellow pubescence above; veins reddish near the base. Third antennal joint thin and long; thorax and scutellum with dense fulvous hairs; abdomen with dense tufts of black hairs on the sides and at end; on each side of the apical black tuft there is a distinct tuft of white hairs. Halteres with black knobs. Hind femora with five to seven black spines beneath. Wings like those of *B. neithokris*, but in the ♀ almost entirely hyaline beyond the basal cross-veins.

28. *Bombylius femoralis*, sp. nov.

Closely allied to *B. neithokris*, but distinguished by the femora being broadly black at the base, by the black notopleural hairs on the thorax, and by the black-haired antennae.

Type ♂ and some additional specimens of same sex from

Abyssinia (*R. J. Stordy*: presented by the Imperial Bureau of Entomology).

♂. Length of body 7·5–8·5 mm.; wing-expanse 22–24 mm.

Head and its appendages as in *B. neithokris*, but base of antennae black-haired; thorax and scutellum likewise, but with fuscous hairs on disc, and with a broad notopleural stripe of black hairs. Black tufts on sides of abdomen very rich and dense. Femora broadly black at base, those of front and middle legs being sometimes entirely black. Wings as in *B. neithokris*, with basal comb clothed with bright golden pubescence; upper branch of third vein abruptly bent upwards at base, but only in one specimen out of five with an appendix; veins black at base.

Series B. **B. MOLLIS.**

29. **Bombylius melanopus**, sp. nov.

A robust species near *B. neithokris*, but at once distinguished by the pointed first posterior cell and by the entirely black legs.

Type ♂ a single specimen from Kenya Colony, Masai, 1913 (*A. O. Luckman*); an additional specimen from Uganda, Nakasongola, 28 July, 1911 (*C. C. Gowdey*) is smaller, measuring only 8·5 mm. in length.

♂. Length of body 10·5 mm.; wing-expanse 24 mm.

Head black, sides of mouth alone being yellowish below. Eyes in contact along a line shorter than ocellar triangle, with upper facets slightly larger; occipital hairs short and dense, wholly yellow, becoming paler below; ocellar and frontal triangles with black hairs, which in second case are mingled with some yellowish pubescence; face densely clothed with depressed, shining yellow, soft hairs, only on sides below with a few black ones; mystax wholly yellow. Antennae entirely black, the first joint wholly black-haired; third joint rather broad in its basal half and not ciliated above. Proboscis entirely black, 6 mm. long. Thorax black, entirely clothed with rather short but dense yellow hairs, without any black ones; scutellum black, clothed with similarly coloured hair, with dark bristles on hind border. Squamae dark, with dense yellow fringes; halteres with black knobs. Abdomen of characteristic shape for group, black, clothed with yellowish and rather long hair, and with small tufts of black ones on sides from second segment to tip. Venter clothed with pale greyish hairs; genitalia black. On thorax and abdomen, under usual yellowish hair, there is a soft and short, more golden-coloured pubescence, as in following species. Legs entirely black, but with pale scales on femora and tibiae, and with pale hair on base of femora; spines entirely black, those of hind femora eight or nine in number; claws black; pulvilli as long as claws and dark in colour. Wings infuscated as in *B. neithokris*-series, but posterior half more hyaline; basal comb black, but with a short, golden pubescence

at base; second longitudinal vein straighter; upper branch of third as in *B. parallelus*; first posterior cell very long and very acute at end, and therefore provided with a very short stalk; middle cross-vein before the middle of the discoidal cell, which is obtuse at end; veins entirely black, even at base; alula less darkened, with a long yellow fringe on hind border.

30. *Bombylius mollis*, Bezzi.

A very distinct species, on account of its soft pubescence, yellow legs, acute first posterior cell and the united eyes of the male. *B. mollis*, described by me in my memoir on the Bombyliidae of the South African Museum, seems to be very common in Central Africa, extending to the south to Natal and the Transvaal, and to the north to Abyssinia. The series of specimens in the British Museum includes a ♂ from Abyssinia, Gambogi, Arussi Country, 14 October, 1908 (*Dr. R. E. Drake-Brockman*); and (presented by the Imperial Bureau of Entomology) a number of other ♂♂ from Abyssinia and Kenya Colony (*R. J. Stordy*); Kenya Colony, Yala Bridge, N. Kavirondo, 15 August, 1911 (*C. W. Woodhouse*) and Kabete, 23 December, 1918 (*T. J. Anderson*); Nyasaland, Mt. Mlanje, 22 November, 1912 (*Dr. S. A. Neave*); Uganda, Kibale, May, 1911, and Katonga R., Buddu, 17 June, 1911 (*C. C. Gowdey*); from Natal, Willow Grange, Mooi R., 17 March, 1913 (the late *R. C. Wroughton*).

NOTE.—The shape of the first posterior cell in this and in the allied species forms an approximation to the condition in the American genus *Parabombylius*, Williston.

31. *Bombylius disjunctus*, sp. nov.

Closely allied to the preceding species, but distinguishable at once owing to the eyes of the male being separated and the base of the wings practically hyaline.

Type ♂ from Nyasaland Protectorate, Maluma's Village, Upper Shiré River, 30 March, 1906 (*Dr. J. E. S. Old*); an additional specimen from Port Natal (*Gueinzus*). Further ♂♂, presented by the Imperial Bureau of Entomology, are from Abyssinia, November, 1911, and Kenya Colony (*R. J. Stordy*); Uganda, Entebbe, 1 June, 1913 (*C. C. Gowdey*); Natal, Will Brook near Estcourt, 23 December, 1913 (the late *R. C. Wroughton*); Nyasaland, Zomba (*Dr. H. S. Stannus*); Uganda Protectorate, S. of Lake George, 3,200–3,400 ft., 17–19 October, 1911 (*Dr. S. A. Neave*).

The following description also applies in most points to the preceding species, and it would seem that the two species exist side by side; yet it is very curious to note that in both cases, as in all the known species of the *B. mollis*-series, only males are known.

♂. Length of body 8.5–9 mm.; wing-expanse 20–22 mm.

Head black, narrowly yellowish only near lower border of mouth. Occiput clothed with short, dense hair of uniform length; this hair becomes paler on under side of head. Frons slightly broader than rather prominent ocellar tubercle, with parallel sides, which, however, diverge somewhat in front, shortly before base of antennae; frons clothed with rather long, erect black hairs, and below these hairs with a short, golden-yellow pubescence; face clothed with dense, soft yellow hairs, forming a downwardly directed mystax of uniform length; this mystax shows silky reflexions, and has some black hairs only on sides below. Eyes with a distinct area of enlarged facets above and in front, symmetrically placed with regard to base of antennae, but descending further below. Antennae wholly black; first joint with black hairs above and yellowish ones below, but sometimes with almost all hairs yellowish, or even with infuscated hairs below; third joint rather broad, its attenuated terminal part being very short; it is bare above, or very rarely has a single hair near base. Proboscis quite black, stout, 6-6.5 mm. long, usually curved upwards; palpi black, clothed with long black hairs. Thorax entirely deep black, not striped, clothed with dense, soft hair of equal length and uniform yellowish colour; paler on pleurae and breast, without any black hair; below these hairs is a short golden pubescence; lateral bristles near suture yellow, but short and concealed between the hairs; on postalar calli there are some black bristly hairs. Scutellum coloured and clothed like thorax, with thin, black, bristly hairs along hind border. Halteres with whitish knobs; squamae whitish, with yellowish fringes. Abdomen entirely black, and of the peculiar shape characteristic of the section, clothed with soft hair, with a golden pubescence like thorax; second, third and fourth segments on their hind borders have some black, erect hairs, which become denser towards sides, forming very small and not very conspicuous black tufts; no white hairs at tip; venter black, dusted with grey, clothed with whitish hairs, which in middle line are very long and erect; genitalia black. Legs entirely yellowish, with knees narrowly black and last four joints of all tarsi black; they are clothed with a pale scaly tomentum, and with whitish hairs at base of femora; spines black, those on hind femora 4-5 long and scattered; claws black; pulvilli short and dark. Wings entirely hyaline, being only a little yellowish-grey at extreme base; basal comb small, black, clothed with short yellowish pubescence; veins black, more or less reddish at base. Second longitudinal vein straight, bent only at end, thus marginal cell is broad; upper branch of third vein as in *B. parallelus*; first posterior cell very long, pointed and shortly stalked; discoidal cell rather narrow and with a short apical cross-vein; middle cross-vein before middle of discoidal cell, but less distinctly than in species of *B. nubilus*-series; alula greyish or yellowish hyaline, with a pale yellowish fringe.

32. *Bombylius obtusus*, sp. nov.

Closely allied to preceding species and distinguished only by darker coloration of body and wings, and by different shape of first posterior cell.

Type ♂ and some additional specimens of same sex, all badly preserved and denuded, from Abyssinia, 1911 (*R. J. Stordy*: presented by the Imperial Bureau of Entomology).

The preceding description applies also to the present species, with the following modifications.

♂. Length of body 8.5–9 mm.; wing-expanse 20–22 mm. The first antennal joint is clothed with entirely black hairs, above and below. The halteres have infuscated, almost black knobs; the squamae are likewise more infuscated. On the legs the femora are sometimes blackened at the base, chiefly those of the front pair. The wings are distinctly infuscated and darker towards the base and along the fore border; the comb is entirely black; the veins are blacker basally; the venation is like that of *B. disjunctus*, but the shape of the first posterior cell is as in the species of the *B. nubilus*-series.

Group 3. *B. micans*, sens. lat.

This group was well characterised by Loew in his work on the Dipterous Fauna of South Africa; but the wing pattern is much more variable than would appear from Loew's statements. The group seems to be confined exclusively to the South African fauna.

The species can easily be recognised by their robust shape, by the head and fore part of thorax usually bearing strong bristles, by the eyes of the male being separated, by the very thin and long third antennal joint, by the hind femora being armed with numerous strong bristles on the under side at the base, and by the pulvilli being very short and poorly developed. The wings have a strong basal comb, and the discoidal cell very obtuse and truncate at the end, with the middle cross-vein placed beyond its middle; the upper branch of the third vein is strongly bent at the base. The hairs at the end of the abdomen are often tuft-like.

The species of the present group evidently form a connecting link with the genus *Systoechus*, chiefly on account of the shape of the head, the separated eyes of ♂, and especially the numerous spines on the hind femora (disposed in more than one row) and even on the middle femora; the form of the discoidal cell resembles that seen in *Anastoechus*, being broadly obtuse at the end.

Among the material from Central Africa presented by the Imperial Bureau of Entomology, there are no species of this group; a few are, however, included in the original British Museum series. I append a synoptic table, including the numerous species seen by me in the collection belonging to the South African Museum.

- 1 (36). Tarsi thin, as long or longer than tibiae; claws without basal tooth; pulvilli distinct, even if little developed; third antennal joint thin and long.
- 2 (25). Scutellum black; bristles of jowls always present; wings with an extensive pattern, consisting of either a brown fore border or broad brown spots.
- 3 (12). Wings with a dark fore border, in which more or less distinct darker spots are visible, but destitute of distinct brown spots on hind half; dorsum of thorax usually with three longitudinal stripes of differently coloured hairs; bristles on jowls entirely yellow, or rarely including a few black ones; abdominal bristles entirely yellow (section *B. micans*).
- 4 (7). Basal comb on wings yellow or red; femora entirely yellow.
- 5 (6). All bristles on body and even those forming alar comb of a bright purple colour; wings with a reddish fore border.*purpureus*, Bezzi.
- 6 (5). All bristles yellow, even those of alar comb; fore border of wings usually brownish-yellow.*micans*, Fabr.
- 7 (4). Basal comb black; femora black towards base.
- 8 (11). Spines on legs entirely yellow; bristles on jowls wholly yellow; thoracic stripes in female very distinct on dorsum; infuscation of cross-veins within dark fore border of wings not spot-like.
- 9 (10). Second and third posterior cells short, distinctly broader than long; species of greater size.*hypoleucus*, Wied.
- 10 (9). Second and third posterior cells long, longer than broad or as long as broad; species of smaller size.*kirtus*, Loew.
- 11 (8). Spines on legs entirely black; jowls with a few black bristles intermingled with yellow ones; thorax of female not distinctly striped; infuscation of cross-veins within dark fore border of wings broader and darker, distinctly spot-like.*servillei*, Macq.
- 12 (3). Wings with broad isolated dark spots on hinder half, dark fore border being more or less developed or even wanting; basal comb always black; jowls entirely clothed with black bristles, or rarely with a few yellow ones intermingled; abdomen with black or yellow bristles (section *B. capensis*).
- 13 (22). Legs with black spines; peristomal comb usually black; bristles on abdomen generally black and longer than hairs.
- 14 (21). Marginal cell entirely filled with brown, with or without hyaline spots at end.
- 15 (20). Marginal cell with two broad hyaline spots at end; abdomen with usual strong black bristles.
- 16 (19). Along hind border of wings brown spots on apical portions of longitudinal veins; and cell with a brown spot at end.
- 17 (18). Brown spots at end of veins near hind border of wing very small and isolated; anal cell with a small spot at end; larger species.
capensis, L.
- 18 (17). Above-named spots very broad and united with spots on discoidal cell; anal cell with a very broad spot at end; medium-sized species.
megaspilus, Bezzi.
- 19 (16). No spots along hind border of wings; no spot at end of anal cell; smaller species.*braunsi*, Bezzi.
- 20 (15). Marginal cell entirely brown, without hyaline spots; no spots on hind border of wings or at end of anal cell; abdominal bristles dark yellow; very small species.*punctatellus*, Bezzi.
- 21 (14). Marginal cell entirely hyaline at end, only narrowly fuscous at base.*punctifer*, Bezzi.
- 22 (13). Spines on legs dark yellow; abdominal bristles yellow and scarcely longer than hairs; peristomal comb yellow, rarely black in part.
- 23 (24). Marginal cell entirely brown; cross-vein between discoidal and second posterior cells not edged with brown.*pentaspilus*, Bezzi.
- 24 (23). Marginal cell entirely hyaline; above-named cross-vein edged with brown.*obesus*, Bezzi.

- 25 (2). Scutellum usually red; wings entirely hyaline, in most cases without any pattern, or else with a faint yellowish tint towards base and along fore border, or with very small and indistinct fuscous spots on cross-veins; alar comb usually yellow or white; bristles on jowls often wanting.
- 26 (29). Jowls with strong yellow bristles, such as usually form the comb in all preceding species; body mostly yellow-haired.
- 27 (28). Scutellum red even on hind border; discoidal cell without a prominent angle below. *spinibarbus*, Bezzi.
- 28 (27). Scutellum with black hind border; discoidal cell with a prominent angle inwards, and there provided with an appendix. *angulosus*, Bezzi.
- 29 (26). Jowls destitute of bristles, or, if some are visible, body chiefly white-haired (section *B. molitor*).
- 30 (35). Frons in ♀ of usual moderate breadth; wings usually not or very little spotted.
- a* (b). Scutellum entirely black; wings quite unspotted. *simplicipennis*, sp. nov.
- b* (a). Scutellum red.
- 31 (32). Alar comb black; scutellum with broad black hind border; wings somewhat fuscated and spotted. *nigripecten*, Bezzi.
- 32 (31). Comb yellow or white; scutellum without black hind border.
- 33 (34). Wings slightly infuscated at base; thorax in ♂ clothed with brownish hair; middle cross-vein before middle of discoidal cell. *peringueyi*, Bezzi.
- 34 (33). Wings quite hyaline, vitreous; thorax in ♂ with silvery hair; middle cross-vein usually on middle of discoidal cell. *argentifer*, Walk.
- 35 (30). Frons in ♀ twice as broad as usual; wings hyaline and considerably spotted; middle cross-vein before middle of discoidal cell. *molitor*, Wied.
- 36 (1). Tarsi short and thickened, shorter than tibiae; claws with long basal tooth; pulvilli entirely wanting; third antennal joint very short and broad (section *B. bifidus*). *bifidus*, sp. nov.

Section A.—B. MICANS.

33. *Bombylius purpureus*, Bezzi.

A species closely allied to *B. micans*, but easily distinguished on account of the bright purple colour of the macrochaetae, alar comb and thoracic stripes. Described by me from Namaqualand, in my work on the South African Bombyliid fauna; the British Museum possesses a solitary ♂ specimen from S. Africa, without precise locality (*Dr. A. Smith*).

34. *Bombylius micans*, Fabricius (1798).

Distinguishable from the other species of its group by the yellow alar comb, and the entirely yellow femora.

A single ♀ from Cape Colony, Saldanha Bay, October, 1892 (*P. de la Garde, R.N.*).

The present species, as interpreted by Loew seems to be fairly rare; *B. micans* as described by Macquart in 1840 would appear to be identical with the following species, which is more common.

35. *Bombylius hypoleucus*, Wiedmann (1821).

Easily known by the black alar comb, and the short and broad second and third posterior cells; it is also the most stoutly built species of all.

Of this common South African species the British Museum possesses a ♂ and ♀ from S. Africa (*Col. Whitehill* and *Dr. A. Smith*).

Section B.—**B. CAPENSIS.**

36. *Bombylius megaspilus*, Bezzi.

A pretty species, closely allied to *B. capensis*, but smaller and distinguished by the very broad black spots on the hind border of the wings.

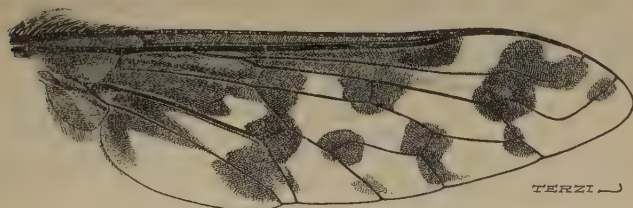


FIG. 3.—*Bombylius megaspilus*, Bezzi. Wing of ♀. × 8.

Described by me from the Cape; the British Museum has a ♂ from Cape Colony, Saldanha Bay, 5 September, 1912 (*K. H. Barnard*).

37. *Bombylius punctifer*, Bezzi.

Easily distinguishable from the other species with spotted wings and black spinose legs, owing to the distal portion of the marginal cell being hyaline.

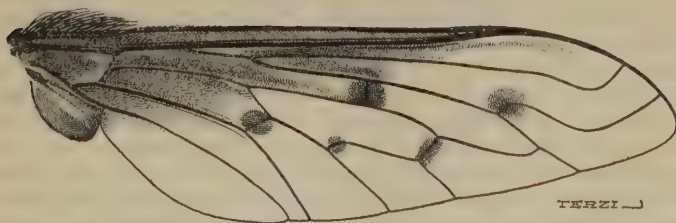


FIG. 4.—*Bombylius punctifer*, Bezzi. Wing of ♀. × 8.

Described by me from Namaqualand; the British Museum has a ♀ from S. Africa (*Dr. A. Smith*).

Section C.—**B. MOLITOR.**

38. *Bombylius simplicipennis*, sp. nov.

Differing from the species of the *B. molitor* section in having the wings entirely hyaline, the scutellum black, and the genal comb wanting and in the peculiar coloration of the body.

This species seems to be closely allied to *B. hypoxanthus*, Loew,

1863, from the Transvaal, but is distinct from it, as well from *B. tinctus*, Walker, on account of the absolutely hyaline wings, even the base and the fore border not being infuscated; from *B. inornatus*, Walker, it differs in the very different abdominal pattern, the black middle stripe being quite wanting.

Type ♀, a single specimen from Pretoria, 1914 (*Miss J. Brincker*).

♀. Length of body 9 mm.; of wing 9 mm.; wing-expanse 24 mm.

Head black, entirely clothed with whitish hairs, without any black hair; occipital hairs short; no bristles; frons as broad as one eye, slightly wider in front; antennae with two basal joints black- and white-haired (third wanting in case of type); face with white hairs; peristoma yellowish, without bristles; proboscis black, 5 mm. long; palpi yellowish; beard on chin white. Thorax and scutellum entirely black; mesonotum clothed with white and yellowish tomentum, forming two whitish longitudinal stripes; sides of dorsum likewise white-haired, so that mesonotum can be said to be whitish with three dark longitudinal stripes, as described by Loew for *B. hypoxanthus*; all macrochaetae yellowish, praealar, postalar and notopleural tufts well developed. Pleurae and breast white-haired. Scutellum black, with golden-yellow tomentum near base, whitish tomentum behind, and yellowish bristles on hind border. Squamae whitish and white fringed; halteres with dark knobs. Abdomen black, broadly oval, clothed with dense yellowish tomentum, posterior half of second segment whitish tomentose, thus forming a broad and complete white transverse band; third and fourth segments with three white spots, one in middle and one on each side; fifth segment with a broad median white spot; hairs white on white parts, dark on yellowish areas; hind borders of segments destitute of true bristles; sides of base and venter with long white hairs; anal tuft is dirty whitish. Legs entirely reddish-yellow, with blackish coxae, dark knees and last tarsal joints; spines and spicules black; hind femora below with a complete row of six or seven spines; pulvilli only half so long as claws. Wings entirely hyaline, with yellowish veins; basal comb small and blackish, but densely clothed with yellow tomentum; costal and praebasal cells hyaline; alula whitish-grey, with a white fringe; discal cross-vein placed a little before middle of discoidal cell, which is acute outwardly; second longitudinal vein entirely straight; upper branch of the cubital fork bent at base; first posterior cell regularly shaped and provided with a long stalk.

39. *Bombylius* ? *argentifer*, Walker, var.

Characterised by the hair covering the entire body being silvery-white, by the hyaline wings, which have a white comb, and by the absence of bristles on the jowls.

A ♂ from Angola (*Mrs. Monteiro*) is somewhat aberrant, having the middle cross-vein much before the middle of the

discoidal cell; considering its provenance, it probably belongs to a distinct species.

NOTE.—Dr. Speiser, in a paper published in 1920 (p. 212), states that *B. argentifer*, Walk., is a synonym of *B. molitor*, Wied.

Section D.—*B. BIFIDUS*.

40. *Bombylius bifidus*, sp. nov.

A very robust, anomalous species of large size, very different from all others here recorded owing to the peculiar characters of the legs; since the third antennal joint is short and broad, the species should perhaps not be assigned to the present group. Owing to the fact that the ♂ is unknown, the true position of the species is the more doubtful, and is perhaps in the vicinity of the *B. analis* group.

Type ♀, a single, very old and poorly preserved specimen from S.-E. Africa, from the *W. W. Saunders* collection. Perhaps this strange insect is not really African at all.

♀. Length of body 14 mm.; wing-expanse 34 mm.

Head black, clothed with rather short and entirely pale fulvous hairs, with only a few black ones at ocellar tubercle; no trace of bristles on frons or on jowls. Antennae entirely black, basal joint with pale hairs, third joint as long as first two together, rather broad, with a rather long terminal style. Frons of usual breadth; mouth opening broad and nearly vertical; proboscis black, 9 mm. long. Thorax entirely shining black, clothed with pale hairs of equal length, which are whitish on pleurae; all bristles whitish. Scutellum shining black like thorax, with hind border less obviously reddish-brown, clothed with short black hairs on disc, and with pale ones on sides and hind border; thin marginal bristles whitish. Halteres with yellow knobs; squamae blackish, with pale yellowish fringes; hypopleural tuft quite white. Abdomen rounded, convex, shining black; first two segments with greyish hairs, remainder with short black hairs, but each segment with a band of longer whitish hairs on hind border; terminal half of abdomen seems therefore to be black, with four yellowish cross-bands; venter with grey and white hairs. Legs with shining black femora and yellow tibiae and tarsi, these last blackened at tips; legs rather robust and short tarsi shorter than tibiae, with first segments somewhat thickened; hind femora below with 9–10 strong black spines, extending to base; tibiae thickened, with many rows of short black spines; tarsi, chiefly front pair, beset on under side with dense, spiny yellowish hairs; claws black, bifid, provided at base with a long tooth, half as long as claw; pulvilli entirely wanting. Wings hyaline, dark brown at extreme base, costal cell and base of first basal cell yellowish, forming a small, faint, brownish spot below bifurcation of second and third veins; basal comb of greater size, black, with yellowish tomentum towards

base; second longitudinal vein slightly undulating, but marginal cell not broadened; upper branch of third vein bluntly angulate at base, bent at right angles, then parallel with and very near to hind border; first posterior cell obtuse at end and provided with a long stalk; middle cross-vein a little beyond middle of discoidal cell, which is broad and truncate at end, its apical cross-vein being as long as middle one; second and third posterior cells rather broad and short, but third smaller than second. Alula hyaline, only at base narrowly brownish, pale fringed; veins black, reddish-brown at base and on fore border.

Group 4. *Bombylius senex*.

Of this characteristic Mediterranean and African group, I have described a species, *B. hirticeps*, from South Africa; but there are no specimens in the collection before me. Owing to the hind femora being unarmed, this group may be regarded as forming a connecting link with the genus *Ploas*.

Genus 2. *SYSTOECHUS*, Loew (1855).

This genus is plentifully represented in the Ethiopian fauna, but Ethiopian species are not easy to distinguish, like those of the other faunal regions.

The species show great resemblance to those of the *micans* group of the genus *Bombylius*, but are as a rule less robust and smaller; the eyes of the males are separated in the same way, and the hind femora are similarly spinose beneath. The upper branch of the third longitudinal vein is always bent at the base, but is gently curved and never provided with an appendix.

Contrary to the procedure followed by Becker, I have here separated the genus *Anastoechus*, for the reasons given under the latter.

In the following table I have distinguished all the species known to me from various sources, and I have taken as a primary division-character that of the abdominal bristles proposed by Loew. But it should be noted that this character is often misleading, because there are species in which the male has no distinct black bristles, while in the female these are strongly developed; again there are others in which these bristles vary in colour from black to brown and even yellowish (in the latter case they are hardly distinguishable among the hairs); and others in which these black bristles are present only on the sides of the segments, and hardly visible if the abdomen is viewed from above.

- 1 (18). Abdomen without complete rows of black bristles on hind borders of segments, and very often without any bristles at all in ♂, or with yellowish bristles difficult to distinguish among hairs, or only with a few black bristles on sides.
- 2 (15). All femora yellow, rarely darkened at base, those of front pair more broadly.

- 3 (8). Species of large size, varying from 13 to 16 mm. in length; ♂ without any abdominal bristles or with yellowish ones; front femora spinose beneath.
- 4 (5). Proboscis conspicuously scabrous beneath; thorax distinctly striped on back and pleurae; pulvilli very small; eyes of ♂ broadly separated; ♀ with numerous abdominal bristles. *scabrirostris*, Bezzi.
- 5 (4). Proboscis quite smooth beneath; thorax entirely without stripes; pulvilli much larger.
- 6 (7). Third antennal joint yellow at end; eyes of ♂ broadly separated; abdomen of ♂ without bristles; front and middle femora with a few spines. *robustus*, Bezzi.
- 7 (6). Third antennal joint wholly black; eyes of ♂ closely approximate; abdomen with yellowish bristles among hairs; front and middle femora with more numerous spines. *ventricosus*, Bezzi.
- 8 (3). Species of smaller size, not exceeding 11 mm. in length; front femora not spinose beneath, or with only 1-2 very small spines.
- 9 (14). Scutellum red, at least in middle; face not fringed with rigid black hairs.
- 10 (13). Abdomen without any black bristles on sides of segments.
- 11 (12). Spines on legs mainly yellow; basal joint of antennae yellow in ♀; abdomen black; wings entirely hyaline; eyes of ♂ more approximate, frontal triangle being small and with a furrow. *chrysellinus*, sp. nov.
- 12 (11). Spines of legs black; abdomen, broadly red on sides; wings strongly infuscated at base and along fore border; eyes of ♂ rather distant, frontal triangle being broader and with a less distinct furrow. *phaeopterus*, sp. nov.
- 13 (10). Abdomen with some black bristles on sides; front femora not spinose beneath; wings hyaline; frontal triangle of ♂ small and with a furrow. *simplex*, Loew.
- 14 (9). Scutellum entirely black; face fringed with rigid black hairs; frontal triangle of ♂ broad and swollen, almost destitute of a median longitudinal furrow; abdomen black, with a few black bristles on sides; wings deeply infuscated at base and on fore border. *tumidifrons*, Bezzi.
- 15 (2). All femora black, or only those of hind pair a little pale toward tips; abdomen with a few black bristles on sides.
- 16 (17). Species of greater size, not less than 9 mm. in length; eyes of ♂ rather approximate; scutellum red, at least in middle; legs stout and spinose as usual. *albidus*, Loew.
- 17 (16). Species of smaller size, not exceeding 7 mm. in length; eyes of ♂ wider apart; scutellum wholly black; legs elongate and slender, less spinose. *nigripes*, Loew.
- 18 (1). Abdomen with complete rows of very distinct and strong black bristles on hind borders of segments.
- 19 (26). Legs slender and long, with hind femora less spinose and with front and middle tibiae much longer than femora and beset with very short spicules; hind tibiae with only three pairs of long bristles; middle femora not spinose; abdominal hairs uniformly distributed.
- 20 (25). Eyes of ♂ more approximate than in other species, sometimes almost in contact.
- 21 (24). Legs beset with black spines; hair on body yellowish, more or less pale, or even whitish.
- 22 (23). Body more rotundate. *mentiens*, sp. nov.
- 23 (22). Body more elongate. *exilipes*, sp. nov.
- 24 (21). Spines on legs yellow; hairs dark reddish-brown, those on frons and face quite black. *melampogon*, Bezzi.
- 25 (20). Eyes of ♂ wider apart. *vulpinus*, Beck.
- 26 (19). Legs stout and shorter, hind femora with more numerous spines, front and middle tibiae shorter and with stronger spicules, hind tibiae with more than three pairs of long bristles; abdominal hairs disposed in rows.

- 27 (32). Third antennal joint bare; squamae with pale fringe; body yellowish or pale-haired.
- 28 (29). Eyes of ♂ widely separated; first antennal joint longer; front femora and tibiae usually more or less blackened, even in ♀; scutellum red; species of greater size, usually 10–12 mm. long, but sometimes reaching 14 mm. *mixtus*, Wied.
- 29 (28). Eyes of ♂ closer together, almost in contact for a long distance; front femora and tibiae usually yellow in ♀; species of smaller size, not more than 10 mm. in length.
- 30 (31). Thorax without bristles in middle of fore border; thoracic hairs rather long, yellowish, without argenteous reflexions, those on pleurae only a little paler; middle femora spinose. *ctenopterus*, Mikn.
- 31 (30). Thorax with distinct brownish bristles on fore border; thoracic hair very short, with conspicuous argenteous reflexions, those on pleurae white. *spini thorax*, Bezzi.
- 32 (27). Third antennal joint with short hairs above; body clothed entirely with black hair; squamae black and black-fringed.
austeni, sp. nov.

41. *Systoechus robustus*, Bezzi (1912).

The present species is easily distinguishable from any other here recorded on account of its large size, the entire absence of abdominal bristles, and especially the yellow tip to the third



FIG. 5.—*Systoechus robustus*, Bezzi. Wing of ♂. × 7.

antennal joint, a character which is not to be observed in any other species.

Originally described from Nyasa: there are some male specimens from Nyasaland, Lat. 13° 40' S., Long. 34° 12' E. (*J. G. Morgan*); from Central Angoniland, 13° 42' S., 34° 20' E. (*same collector*); from N. Rhodesia, Mayabuka, 3,400 ft., caught hovering (*R. C. Wood*).

In the present species the front femora are unarmed or have only a single short spine; the middle femora have only two spines; the spicules of the front tibiae are small but distinct. On the sides of the abdominal segments there are yellow bristles, which are hardly visible among the hairs.

It is possible that the present species may be the same as *Bombylius brunnipennis* of Loew, which is, however, a *Systoechus*, described from Mozambique; and having regard to the size, *Bombylius ferrugineus*, Macquart (1834), described from Senegal and recorded from Zanzibar by von Roeder, may also be the same species.

A damaged specimen from Angola (*Mrs. Monteiro*, ex coll. *W. L. Distant*) in the British Museum (recorded as a new species by Miss Ricardo in *Ann. and Mag. N.H.* (7) VII, p. 91 (1901), is perhaps a variant of the female of the present species; the third antennal joint is entirely reddish and on the hind borders of the abdominal segments there are strong yellow bristles, some of which on the sides are dark brown or even black in colour.

42. *Systoechus chrystallinus*, sp. nov.

A medium-sized species, distinguishable by hyaline wings, mainly yellow spines on the legs, yellow basal joint of the antennae in ♀, and entire absence of abdominal bristles.

Type ♂, type ♀, and two additional ♂♂ from Nyasaland Protectorate, 1909 (*Dr. S. K. Norris*); a small ♀ from Portuguese E. Africa, Lorenzo Marques, Inyok Island, 16 February, 1907 (*F. D. McMillan*) seems also to belong here; there are also a ♀ from Portuguese E. Africa, E. of Mt. Mlanje, 3-7 October, 1913 (*Dr. S. A. Neave*); and a ♀ from N.-W. Rhodesia, near Chilanga, 18 September, 1913, on path (*R. C. Wood*).

The present species shows a strong resemblance to certain palaearctic forms, for example, *S. autumnalis*, Wied., and *S. gradatus*, Meig. The specimen referred by me to *S. simplex* in my paper of 1912 seems to belong here on account of the yellow spines on the legs.

♂♀. Length of body 8.5-10 mm.; wing-expanse 18-23 mm.

Head black, yellowish on mouth borders, grey dusted. Occiput little developed, clothed with dense and short yellowish hairs, which become paler below, and pass gradually into light yellowish beard. Eyes bare, those of ♂ rather large, with upper facets distinctly enlarged; eyes in ♂ closely approximate, frons at narrowest point a little broader than anterior ocellus; frons in ♂ clothed, like ocellar tubercle, with long, erect, black hairs, only rather small frontal triangle, which shows a narrow median groove, with some short yellowish hairs on fore border; frons of ♀ broad, with a very prominent ocellar tubercle, on which there are long erect black hairs, but elsewhere clothed with short yellow hairs, and with some bristly black ones on sides. Face short but projecting, with a well-developed mystax, formed in ♂ chiefly by black, and in ♀ chiefly by yellow hairs. Antennae rather close together at base, those of ♂ entirely black, those of ♀ with first joint entirely, and sometimes third on its lower side, yellow; first joint rather short, in ♂ with long black hairs, in ♀ with yellowish hairs below; third joint linear, hardly at all dilated at base, a little longer than first two joints together. Proboscis entirely black, 5-6 mm. long; palpi short, yellow, with black tips and short dark hairs. Thorax black, dull, showing in ♀ three longitudinal stripes of dark grey dust, broadly coalescent behind; it is clothed with very dense, yellowish hairs of uniform and medium length, which, viewed from in front,

show sericeous reflexions; hairs on pleurae and on breast only a little paler, black hairs entirely absent, bristles likewise whitish-yellow; metapleural tuft dense, but not differing in colour from other hairs. Scutellum dark red, with narrow black base and sometimes with a black hind border, clothed like thorax, and without distinct bristles on hind border. Squamae whitish-yellow, with brown borders and long and dense yellow fringes; halteres with white knobs. Abdomen entirely black, somewhat shining, entirely clothed with yellowish hairs like those of thorax but a little longer, and on venter a little paler; bristles absent, or in ♀ yellow and concealed among hairs; ♂ genitalia of considerable size and of a reddish colour; anal tuft in ♀ very large, golden coloured. Legs entirely yellow, with bases of femora in ♂ and last tarsal joints in both sexes black; legs with whitish scales, white hairs at base of femora below, and mainly yellow spines; front tibiae with well-developed spicules; front femora unarmed; middle femora with 1-2 yellow spines; hind femora with 5-8 yellow spines, those near end, chiefly in ♀, are black; upper apical row on hind femora in ♀ strong and black; claws black, strongly bent at end; pulvilli whitish, as long as claws. Wings entirely hyaline, yellowish only at extreme base and in first costal cell; alula almost hyaline, with yellowish fringe; basal comb strong, with black bristles, but clothed with a dense yellow dust. Veins reddish at base and black at end, of normal shape, discoidal cell being as long as usual and rather acute at end, its terminal cross-vein being only half as long as middle one.

43. *Systoechus phaeopterus*, sp. nov.

Closely allied to preceding species on account of absence of abdominal bristles, but distinguishable owing to the strongly infuscated base of the wings, the black spines on the legs, the more widely separated eyes of the ♂, and the different colour of the fourrure.

Type ♂ and an additional specimen of the same sex from N.-W. Rhodesia, Chilanga, 12-28 August, 1913, "on ground" and "sitting on bare ground near flowers" (*R. C. Wood*). The present species is allied to *S. robustus*, Bezzi, from which it differs owing to smaller size and wholly black third antennal joint; and to *S. tumidifrons*, Bezzi, differing from the latter owing to its red scutellum, red abdominal sides, the absence of spines on the front femora, and to black abdominal bristles being entirely lacking.

♂. Length of body 9.5-10 mm.; wing-expanse 19-23 mm.

Head black, grey dusted; occiput little developed, with short yellowish hairs; chin with a dense, white beard. Frons broad, at its narrowest point as broad as base of ocellar tubercle, frontal triangle very large, smaller and provided with a fairly distinct median furrow; hairs on frons and on ocellar tubercle long, erect, black, sides of frontal triangle clothed anteriorly with

yellowish hairs. Eyes bare, rather small, with upper facets not distinctly enlarged. Face short, but projecting, with sparse yellowish hairs in middle, and with a narrow mystax of strong black hairs along mouth border, less strongly developed than in *S. tumidifrons*. Antennae entirely black, first joint rather short, with short yellowish hairs; third joint a little longer than first two joints together, with a moderately broad base and tapering gradually so as to form a rather long point: Proboscis black, straight, 6-7 mm. long, with labium a little scabrous beneath near base; palpi short, clavate, black and black-haired; mouth opening broad and free. Thorax black, rather convex above, clothed with dense, rather short hairs, which on dorsum, viewed from above, are of a rather dark colour, and viewed from in front are pale yellowish, with sericeous reflexions; on the pleurae hairs are paler, on breast they are whitish, and on notopleural line they are of a darker colour, but not black. Scutellum dark red, broadly black at base and sometimes even on hind border, clothed like thorax; bristles on hind border yellow, like those on thorax. Squamae pale brownish, with long whitish fringes; halteres with whitish knobs; metapleural tuft whitish rather short. Abdomen elongate, dull black, broadly red on sides, clothed with dense hairs, which are longer and paler than those on thorax, being almost whitish, even viewed from above; bristles absent or only a few yellowish ones at end and sides, concealed within fourrure. Venter brownish, with short whitish hairs and with erect black bristles; genitalia red. Legs entirely yellow, with black coxae and tarsi; femora sometimes darkened at base, with yellowish scales, whitish hairs beneath, and entirely black spines; spicules on front tibiae well developed; front femora without, middle femora with 1-2, hind femora with 6-7 spines, those of subsidiary rows being also long and strong; claws very thin, black with yellow bases; pulvilli whitish, long. Wings hyaline, but strongly infuscated from end of first vein obliquely to end of the second basal cell, and middle of anal cell; alula dark grey, with yellowish fringe; basal comb strong, black, dark yellowish tomentose. Veins black, partly dark red near base; venation normal, discoidal cell rather obtuse at end, its terminal cross-vein being as long as middle one.

44. *Systoechus simplex*, Loew (1860).

A well-known South African species, characterised by the approximate eyes of the ♂, the yellow femora, the presence of a few black bristles on the sides of the abdomen, the pale coloration of the fourrure and the almost entirely hyaline wings.

A ♂ specimen from Cape Town, determined by Miss Ricardo; another from "South Africa" (*Dr. A. Smith*); a ♀ from "South Africa" (ex coll. *Vigors*); and several specimens, of both sexes, from Howick, Natal (*J. P. Cregoe*), and Transvaal, Pretoria, March, 1914 (*Miss J. Brincker*).

The present species is closely allied to *S. chrystallinus*, but is distinguishable by the conspicuous black bristles on the sides of the abdomen, by the entirely black spines, on the legs, and by the black basal joints of the antennae in the ♀.

45. *Systoechus albidus*, Loew (1860).

Another well-known species allied to the preceding, but recognisable by the almost entirely black femora.

Three ♂ specimens from Pretoria, already determined by Miss Ricardo; a ♂ from Natal, Willow Grange, Mooi River, 7 December, 1913 (the late *R. C. Wroughton*); and several specimens of rather small size (7–8 mm.), from Transvaal, Pretoria, March, 1914 (*Miss J. Brincker*).

46. *Systoechus nigripes*, Loew (1863).

Closely allied to the preceding species, but of much smaller size, with entirely black scutellum, and more slender and less spinose legs.

Originally described from the Orange Free State by Loew, and redescribed by me from the Cape. The British Museum possesses a ♂ from Natal, Ulundi, 5,000–6,500 ft., September, 1896 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*). Another ♂, from the same locality and collector, seems to be of larger size, since it has the abdomen distended, probably owing to a fungoid disease. The present species, owing to the slenderness of its legs, forms a connecting link between the *S. albidus* group and the following group, *S. exilipes-vulpinus*.

47. *Systoechus mentiens*, sp. nov.

A smallish species, allied to the preceding but distinguished by the yellow legs, and by the eyes of the ♂ being closer together; from *S. ctenopterus*, Mik., it is distinguishable by reason of its more slender and less spinose legs.

Type ♂ and type ♀ from Natal, Ulundi, 5,000–6,500 ft., September, 1896 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*); an additional ♀ from Natal, Estcourt, September–October, 1896 (*same collector*).

♂♀. Length of body 7 mm.; wing-expanse 16 mm.

Head black, on rather swollen occiput with dense and rather long tawny hairs, and below on chin with dense and long white beard. Eyes of ♂ approximate, separated only by a narrow streak which is as broad as anterior ocellus; upper facets somewhat enlarged. Frontal triangle rather broad, with a distinct median furrow, and clothed like ocellar tubercle with very long, erect, black hairs, only at outer corners with short yellow pubescence; frons in ♀ broad, with a deep and wide, transverse, median furrow, clothed with tawny hairs, and with numerous long, erect, bristly black hairs; face with dense

and long hairs, forming a large mystax, which near mouth is yellow, while above there are many black hairs. Antennae entirely black; first joint long, with long black hairs, but in ♀ with some yellowish ones beneath; third joint as long as first two joints together, linear, a little broadened at base. Proboscis black, 5 mm. long; palpi black and dark-haired. Thorax dull black, clothed with rather long and dense, tawny hair of uniform length, even on pleurae, with whitish reflexions and without any black hair or bristles. Scutellum dark red, with black base and black hind border, in ♂ almost entirely black with a reddish middle spot, clothed like thorax, without distinct marginal bristles. Squamae pale yellowish, with dark border and long tawny fringe; halteres of ♂ with black, those of ♀ with whitish knobs. Abdomen short and broad, entirely dull black, clothed with tawny hairs like thorax, with complete rows of strong black bristles on hind borders of segments, venter black, with greyish hair and short black bristles; ♂ genitalia black; anal tuft in ♀ yellow, but less developed. Legs slender and long, front and middle tibiae longer than usual and with spicules very little developed; legs yellow, but with black coxae and tarsi, and in ♂ femora more or less broadly blackened at base; legs clothed with tawny scales, and with whitish hairs on femora and black spines; hind tibiae with only three pairs of longer spicules; front femora without, middle femora with one, hind femora with 4-5 spines, other rows reduced to a single praeapical bristle; claws black; pulvilli whitish, as long as claws. Wings greyish hyaline, very slightly infuscated at extreme base and in costal cell; alula cinereous, with yellowish fringe; basal comb but little developed, with minute black bristles and yellow tomentum at base. Veins reddish, infuscated towards end; venation normal, discoidal cell rather short and obtuse at end, its terminal cross-vein being as long as middle cross-vein; second and third posterior cells rather long.

48. *Systoechus exilipes*, sp. nov.

A very distinct species owing to its elongate body, which is unique among those of the group with slender legs.

The species is described by me from Kenya Colony in my paper on the Bombyliidae of the Alluaud-Jeannel Expedition. The present consignment contains a number of specimens of both sexes from Kenya Colony, Nakuri, January, 1913 (*Dr. B. L. van Someren*), and from S. Abyssinia, 1911 (*R. J. Stordy*); also a ♀ from Marsabit, 29 November, 1911 (*Dr. G. R. H. Chell*).

A ♂ from Angola (*Mrs. Monteiro*) is referred with a doubt to this species, since it shows the eyes a little more widely separated than usual.

49. *Systoechus melampogon*, Bezzi (1912).

A pretty species, readily recognisable owing to the dark tawny colour of the fourrure, the yellow bristles on the legs, and the almost connected eyes of the ♂.

Originally described from Southern Nigeria and Nyasa, the collection before me includes a single ♂ from S. Nigeria, Ibadan, 3 February, 1914 (*Dr. W. A. Lamborn*).

50. *Systoechus vulpinus*, Becker (1910).

This species differs from the other members of the slender-legged group owing to the eyes of the male being wide apart.

In general appearance and in the colour of the fourrure *S. vulpinus* strongly resembles *S. chrystallinus*, but it bears distinct black or dark brown bristles on the hind borders of the abdominal segments. Front femora with no spines beneath, middle femora with 1 spine, hind femora with 5 spines beneath; all the spines and bristles are black; the spicules on the front and middle tibiae are very thin and minute.

Originally described from Aden, the British Museum possesses a ♂ from the same locality, 16 March, 1895 (*Capt.*, now *Lt.-Col.*, *C. G. Nurse*); a damaged ♀ from Abyssinia, Gambogi, Arussi Country, 16 October, 1908 (*Dr. R. E. Drake-Brockmann*), should perhaps also be assigned to this species.

51. *Systoechus mixtus*, Wiedemann (1821).

A common South African species, characterised by the complete rows of strong black bristles on the hind borders of the abdominal segments, and closely allied to the following one, from which it is only distinguished by its usually greater size, and by the eyes of the ♂ being more widely separated.

S. mixtus seems to be a highly variable species as shown by a lengthy series (13 ♂♂ and 19 ♀♀) of specimens from Natal: Willow Grange, Mooi River, April and May, 1911 (*R. C. Wroughton*). These specimens vary in length from 7 to 14 mm.; the eyes of the ♂ are always as widely separated as the breadth of the ocellar triangle; those of the ♀ are also further apart than in *S. ctenopterus*, but in some specimens the interspace is the same as in that species. The legs are short and stout, and beset with strong spines; the front femora are usually unarmed, or sometimes exceptionally have only a single spine; middle femora with 2-4 spines; hind femora with a complete row of many spines. The front femora and tibiae are in the ♂ more or less blackened; in the ♀ the femora show a very characteristic black stripe on the inner side of the apical half; but there are ♀ specimens in which the front femora are entirely yellow and the tibiae likewise.

There are also specimens from Nyasaland: Central Angoniland, Lat. 13° 40' S., Long. 34° 20' E. (*S. G. Morgan*); Kenya Colony: Moyale, 16 December, 1911 (*Dr. G. R. H. Chell*), and Embu,

4,800 ft., February, 1914 (*J. O. Browne*); Nyasaland: Chiromo, 10 June, 1911 (*Dr. J. E. S. Old*); N.-W. Rhodesia, Kafu, 28 August, 1913 (*R. C. Wood*); and from Natal: Durban and Willow Grange (the late *R. C. Wroughton*). It must, however, be observed that the specimens from Central Africa are less typical than those from the South. The British Museum possesses specimens from the Transvaal: Pretoria, determined by Miss Ricardo, and others collected by *Miss J. Brincker* in March, 1914; from Natal: Ulundi, 5,000–6,500 ft., September, 1896 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*); from N. Rhodesia, Refunswa, 25 April, 1910 (*O. C. Silverlock*); from Kenya Colony: Njoro (*A. J. Cholmley*); from Nyasaland: Port Herald, 1912–13 (*Dr. J. E. S. Old*); and others collected by *Dr. D. Drew*.

52. *Systoechus ctenopterus*, Mikan (1796).

A palaearctic species, differing from the preceding one in the eyes of the ♂ being much closer together, in its smaller size, and in the front femora of the ♀ being usually entirely yellow.

Already recorded by me from N. Nyasa, there is in the British Museum Collection a ♀ from Cape Colony: False Bay, on mountain above St. James, 28 January, 1912 (*K. H. Barnard*); and another from Natal: Willow Grange, Mooi River, 15 November, 1913 (the late *R. C. Wroughton*). To distinguish the present species from *S. mixtus* in the ♀ sex is not an easy matter; perhaps the two are only extreme forms of the same, widely spread insect.

53. *Systoechus austeni*, sp. nov.

Distinguishable from all other species of the genus owing to the black colour of the fourrure, and the ciliation of the third antennal joint. Type ♀ a single specimen from N.-W. Rhodesia: Chilanga, 4,000 ft., 18 September, 1913 (*F. V. Bruce-Miller*). Named in honour of Major E. E. Austen, D.S.O., who on a label has written: "Closely allied to but apparently distinct from *S. fuliginus*, Loew (*Wien. ent. Monatschr.*, VII, p. 13, 1863) from the Orange Free State." The present species is smaller, and the wings are not "*nigro infuscatiss.*"

♀. Length of body about 10 mm.; of wing, 9 mm.

Head black, bronze dusted; occiput a little excavated above, with very short and not dense black hairs, which are black even below, like short beard; ocellar tubercle not very prominent, with some black hairs; frons one-third of head in breadth, with a transverse furrow above ocelli, nearly bare towards middle, with short, black, bristly hairs on sides, and between these with some others which are pale coloured. Face short and not much produced, almost bare, mystax being formed by sparse, short, black hairs, ranged along mouth borders; lower cheeks bare and shining brown. Antennae entirely black, rather distant at base; first joint proportionally short, with rather short and

sparse black hairs; second joint globular; third joint a little longer than first two together, rather broad at base and bearing some short hairs on upper side. Mouth opening free; proboscis quite black, with labium smooth beneath; palpi short and black. Thorax entirely black, rather dull owing to a faint brownish dust, clothed with very short and entirely black hairs, which on pleurae are very sparse; notopleural and postalar bristles black; metapleural tuft sparse and black. Scutellum dark red, with black base and somewhat black hind border clothed like thorax, and with a row of strong bristles on hind border. Squamae dirty whitish, with long black fringes; halteres with whitish knobs. Abdomen ovate, entirely black, brownish dusted, with complete rows of strong black bristles on hind borders of segments; its black fourrure very sparse, except on lateral borders confined to the rows of bristles, so that segments are largely bare, being only a little more hairy on sides and at end; venter black, with scattered black hairs; anal tuft concealed. General black colour of hair on entire body very intense, without any paler glints. Legs entirely deep black, only the knees narrowly yellowish; legs short and stout, with well-developed black spines, but without scales or hairs even on femora; front femora without middle femora with 3, hind femora with 6-7 spines beneath, apical rows likewise well developed; claws black; pulvilli dirty grey, as long as claws. Wings quite hyaline, extreme base and first costal cell with only a faint yellowish tinge, alula for most part greyish hyaline, with a dark fringe; basal comb formed by very long and strong black bristles, and destitute of paler tomentum. Veins black, only first vein dark reddish at base; venation normal, discoidal cell rather obtuse at end, its terminal cross-vein equal in length to middle one; anal cell wide open at tip; second longitudinal vein less sinuous than usual, its proximal portion therefore not so close to third vein.

Genus 3. **ANASTOECHUS**, Osten Sacken (1877).

This genus seems to be well represented in the Ethiopian Region, chiefly in the south.

Becker in his recent work on the *Genera Bombyliidarum*, p. 492, note, united it with *Systoechus*; but distinctive cephalic and venational characters were previously given by Osten Sacken, and I find that the characters furnished by the venation are very valuable. The discoidal cell, for instance, is always obtuse at the tip and almost truncate, its terminal cross-vein being at least as long as often longer than the middle cross-vein. This latter character is already indicated, though always less developed, in some species of *Systoechus* and of the *B. micans* group of *Bombylius*. At any rate this character, combined with features presented by the head, obviates any doubt as to the generic position of any species belonging to *Anastoechus*. As a detail

of practical value, it may be added that in *Anastoechus* the face is always clothed with white or whitish hair, while in *Systoechus* there are at least some black hairs intermingled, and sometimes the hair is entirely black. Moreover, the basal joints of the antennae are often yellow; strong bristles are often present on the face and thorax; the abdominal fourrure is long and tuft-like, and there are usually strong bristles on the segments; the spines on the legs are always relatively short, and often very small or even nearly wanting; the second longitudinal vein is straighter, and its basal portion is further from the third. A character common to all the species is also the white fourrure on the under side of the body.

More recently Becker himself (*Ann. Mus. Nat. Hung.*, XIV, pp. 50-51, 1916) has accepted the two genera as distinct, chiefly on account of the character of the frons in the ♂ of *Anastoechus*. As is to be seen from the Catalogue of the Ethiopian Bombyliidae, some species described by Wiedemann (*Bombylius rubricosus*), by Macquart (*Bombylius latifrons*, *B. canus*), and by Loew (*Systoechus cervinus*), which are usually placed under *Systoechus*, belong without doubt to *Anastoechus*, of which I described the first South African species (*A. meridionalis*) in 1912.

The species examined by me may be distinguished as follows:—

- 1 (20). Among fourrure, always distinct and often very strong bristles; hair on upper side of body not argenteous; scutellum red, at least on disc.
- 2 (3). Head below with a distinct peristomal comb of yellow bristles; wings variegated, with marginal cell quite filled with brown to end, and with a yellow basal comb; antennae red at base.
- 3 (2). No distinct peristomal comb; wings with marginal cell hyaline, at least in its terminal half.
- 4 (13). Basal joints of antennae red or yellowish; palpi yellow.
- 5 (6). Proboscis very long, distinctly longer than body, with basal half of labium whitish and with long and thin labella; eyes in ♂ rather far apart; no bristles on head or on fore part of thorax; wings half brown, half hyaline, with yellow basal comb. . . . *macrorrhynchus*, sp. nov.
- 6 (5). Proboscis shorter than body, with labium black basally and with short and stout labella.
- 7 (10). Wings hyaline, with costal cell not darkened, or merely pale yellowish, and with yellowish-grey or whitish basal comb; face in ♀ with a few strong bristles in middle; third antennal joint of usual length.
- 8 (9). All bristles on body and head pale yellow or whitish; abdomen entirely red; legs yellowish; wing veins pale yellow.
- 9 (8). Bristles on frons and abdomen mainly dark or even black; abdomen entirely black; legs mainly black; wing veins dark coloured.
- 10 (7). Wings infuscated at base and along fore borders, in ♂ half brown, half hyaline, and with basal comb black, at least at base; third antennal joint rather short; legs mainly yellow.
- 11 (12). Eyes in ♂ rather far apart; frons clothed at base with black hair; alar comb entirely black. . . . *meridionalis*, Bezzi.
- 12 (11). Eyes in ♂ closer together; frons entirely white-haired; alar comb black at base and dark yellowish at end. . . . *varipecten*, Bezzi.

- 13 (4). Antennae quite black; palpi usually black.
- 14 (15). First antennal joint short, twice so long as second; eyes in ♂ approximate, face in same sex destitute of bristles; wings half brown, half hyaline, with basal comb yellow; palpi yellow; body fourrure rather short. *cervinus*, Loew.
- 15 (14). First antennal joint thrice so long as second; palpi black or blackish; body fourrure long.
- 16 (19). Face with strong bristles, even in ♂ wings half brown, half hyaline, or infuscated at base and on fore border, with basal comb black and of usual size.
- 17 (18). Eyes in ♂ widely separated and with small facets; head and thorax with very numerous black bristles; palpi black; wings infuscated at base. *erinaceus*, Bezzi.
- 18 (17). Eyes in ♂ very close together, with upper facets enlarged; bristles yellow; wings in ♂ half brown, half hyaline. *macrophthalmus*, Bezzi.
- 19 (16). Face of ♂ without bristles; wings hyaline, with a very small, yellow basal comb; eyes of ♂ rather far apart. *innocuus*, Bezzi.
- 20 (1). Body clothed, even on upper side, with long argenteous fourrure, without any distinct bristles, even on abdomen; scutellum quite black; antennae entirely black; wings wholly hyaline, with a very small argenteous basal comb; proboscis as long as body; palpi black. *leucosoma*, Bezzi.

54. *Anastoechus macrorrhynchus*, sp. nov.

A species with yellowish basal joints to the antennae, mainly red abdomen and half brown, half hyaline wings readily distinguishable from any other owing to the length and shape of the proboscis.

Type ♂, a single imperfectly preserved specimen from N. Rhodesia, Kaperekeza, 11 September, 1910 (*F. V. Bruce-Miller*); there are moreover 1 ♂ and 2 ♀♀ (type ♀) from Belgian Congo: Lufira R., Katanga, 3,500 ft., August, 1907 (*Neave* coll.). The ♀ has the frons three times as broad as that of the ♂, but clothed with similarly coloured hair; the face bears no bristles.

♂. Length of body 10.5 mm.; wing-expanse 23.5 mm.; length of proboscis 12 mm.

Head black, yellowish towards middle of face and around mouth borders; occiput not very prominent, grey dusted, with white scales towards eye borders, and above with sparse whitish hair, below with denser white hair, which are continuous with the rich white beard. Eyes rather small, with facets of equal size, moderately close together, space between them being 1.5 times breadth of ocellar triangle. Ocellar tubercle broadly rounded, with dark hairs. Frons with whitish dust, with a band of dark-coloured, erect hairs on basal half, and with forwardly directed white hairs on apical half; face densely clothed with white hairs, without any bristles; jowls and peristoma without bristles. Antennae rather distant at base; first joint pale yellow, more than thrice as long as second, clothed with white hairs; second joint pale yellow and globular; third joint brownish-grey, as long as first two joints together, as broad as second at base and gradually tapering to a long and thin point, which is pale yellow at end and does not bear distinct bristles. Proboscis

exceedingly elongate, much longer than body, rather thin, curved downwards at end; it is black, but basal half of labium is whitish-yellow; distal half of proboscis appears a little swollen; labella thinner and longer than usual. Thorax black, somewhat shining, with yellowish hair of uniform length on back, and white hairs on pleurae and breast; lateral bristles yellowish, but not developed on front part. Scutellum (denuded) dark red with black base, and with yellowish bristles on hind border. Squamae dirty whitish, with white fringes; halteres yellow, with knobs white above. Abdomen red and shining; basal segment black, four following segments each with a broad triangular black spot in middle, extended basally towards sides and prolonged behind so as to come in contact with following spot; terminal segments without spots; hair (largely rubbed off in case of specimen described) whitish, hind borders of segments with rows of whitish bristles; venter pale yellowish-red, clothed with white hair; genitalia dark reddish. Legs entirely pale yellow, hind femora infuscated on upper side nearly to tips, but densely clothed with white scales; all spines yellow, those on anterior tibiae well developed, those on femora being 0, 3 and 6-7; front and middle femora have besides white hairs below at base; claws black, thin, with yellow bases; pulvilli not developed. Wings with an entirely yellow basal comb of great size; they are infuscated on more than basal half, limit of fuscous portion not sharply defined, running obliquely from end of first vein to that of fifth; alula fuscous, with whitish fringe. Veins red; discoidal cell broadly obtuse at end, its terminal cross-vein a little longer than middle one; first posterior cell as broad as discoidal cell.

55. *Anastoechus rubicundus*, sp. nov.

Closely allied to *A. spinifacies*, Bezzi, from Assab, but readily distinguishable owing to its greater size, and the prevalent rufous or yellowish colour of the abdomen, macrochaetae, legs and wing veins.

Type ♂, type ♀, and an additional ♀ specimen from N.-E. Africa: Somaliland, Zaila, 27 May, 1895 (*Capt.*, now *Lt.-Col.*, *C. G. Nurse*).

♂♀. Length of body 12-13 mm.; length of wing 13-13.5 mm.; wing-expanse 31-33 mm.

Occiput prominent, black, grey dusted, with scaly white tomentum near eyes, and with long and dense white hair in ♂, shorter and intermingled with many yellowish bristles beneath vertex in ♀. Eyes brown, with greenish reflexions; in ♂ upper facets are distinctly enlarged and redder; eyes in ♂ separated, but at narrowest part of frons they are approximate for a distance which is as broad as ocellar tubercle; frons in ♂ much broader in front, occupying at level of antennae more than half of breadth of head; frons in ♂ with reddish ground-colour, grey

dusted and densely clothed with white hair, only at narrowest point near ocelli having some brownish hairs. Frons in ♀ short and broader than half width of head, clothed with whitish hair, but at vertex with a complete transverse band of brown hair, including ocellar tubercle; on each side towards base there is a tuft composed of a number of yellowish bristles, which become brownish in brown band. In both sexes, along middle line, frons has no long hairs, but only a scaly white tomentum, which thus forms a sort of longitudinal middle furrow, on sides of which hairs and bristles are directed forwards and outwards. Ocellar tubercle in both sexes clothed with brown, bristly hairs. Face, jowls and chin in ♂ entirely clothed with dense, white, short hair; on middle of face, near upper edge of mouth, there are some longer white bristles; In ♀ these parts are also clothed with dense, white hairs, but in middle of face there is a tuft of more or less numerous, strong, yellowish or whitish bristles. Jowls without bristles. Antennae with basal joints pale reddish-yellow, first being clothed with long, white hairs; third joint black (basal ring yellowish), very narrow and linear, chiefly in ♀, about twice as long as first joint and with terminal portion attenuated so as to form a styliform joint, which is sometimes pale coloured. Posterior mouth borders and base of proboscis pale yellow; proboscis black, red below at base, 6.5–7 mm. long; palpi pale yellowish, short, almost bare. Thorax black, densely clothed with short pubescence, which is yellowish in ♀ and brownish in ♂, but viewed from in front is whitish on anterior part in both sexes; bristles on anterior part, on sides, and on posterior part just before scutellum very numerous and long, chiefly in ♀, and all yellowish or whitish; pleurae and breast densely white pubescent, with scattered whitish bristles. Scutellum like thorax, but ground-colour more reddish; in ♂ its pubescence is brown in middle and white on sides; marginal bristles whitish. Squamae dirty yellowish, with dense white fringes; halteres pale yellowish. Abdomen entirely reddish coloured in both sexes; in ♂ it is clothed with long, dense, soft, brownish pubescence, with a large tuft of pure white hair at tip; in ♀ pubescence is shorter and whitish, and there is also a whitish scaly tomentum, but at tip there is a white tuft as in ♂; in both sexes hind borders of segments bear complete rows of numerous bristles, yellowish or brownish on basal half, whitish on terminal part; in ♀ on account of shortness of pubescence on tergites, transverse rows of bristles are very conspicuous, thus giving to abdomen a peculiar appearance. Venter reddish, whitish or yellowish pubescent and tomentose, in ♀ with transverse rows of short, white bristles on hind borders of segments. Legs entirely pale yellow, white scaled and yellow spinose; middle femora with only 1 spine on middle of anterior side in ♀; hind femora with 5–7 strong spines below; claws black, with reddish bases; pulvilli vestigial. Wings broad and long, with grey-

whitish tint seen in insects inhabiting sandy localities, becoming yellowish towards base and along fore border; basal comb very long and strong, entirely whitish, tipped with yellow; venation typical, veins entirely yellow; alula broad, whitish-grey, with whitish fringe; discoidal cell short, with parallel sides, its terminal cross-vein much longer than middle one.

56. *Anastoechus meridionalis*, Bezzi (1912).

Recognisable by the reddish basal joints of the antennae, by the face not being spinose, by the frons being black-haired above, and by the black basal comb on the wings.

Originally described from W. Nyasa, there are in the present consignment a couple of specimens from N.-W. Rhodesia: the ♂ from Chilanga, 22 February, 1913, the ♀ from Kafue, 28 August, 1913, hovering by wild composite plant (*R. C. Wood*). In addition there are two ♀♀ from N. Rhodesia: Kasempa District, 1907 (*Dr. A. Yale Massey*). There is also a doubtful ♀ specimen from Tanganyika Territory: Itigi, 10 September, 1917 (*Dr. G. D. H. Carpenter*), with darkened basal joints to the antennae and dark yellowish basal combs on the wings.

To my original description is to be added: No definite bristles on face or on jowls except a few very thin and hardly distinguishable ones on middle of face. Proboscis entirely black, 6 mm. long, with yellow basal ring. Abdomen sometimes narrowly red on sides and on hind borders of segments; bristles often darkened at tips. Front femora with 0, middle with 1-3, hind femora with 5-7 spines below; pulvilli indistinguishable. Terminal cross-vein in discoidal cell a little longer than middle one; bristles of basal comb black, but sometimes exhibiting faint dark yellowish glints at tips.

The as yet undescribed ♂ resembles the ♀; the eyes have equally small facets and are rather wide apart, the space between them at the narrowest point being twice as broad as the breadth of the ocellar triangle. The pubescence at the tip of the abdomen is whitish, even viewed from the sides or from above. The wings are partly brownish, partly hyaline, being strongly infuscated from the base to a clearly defined line passing from end of first vein to end of fifth; in the ♀ this infuscation is much less pronounced.

Owing to the characteristic coloration of the frons in the present species, it is possible that *A. meridionalis* is identical with *Bombylius canus*, Macquart, described from a ♀, the provenance of which is unknown. It was suggested by Macquart that *B. canus* may be the ♀ of his *B. latifrons*, from the Canary Islands (recorded also from the Cape); according, however, to the redescription of *B. latifrons*, given by Becker in 1908, my *A. meridionalis* is a very different species.

57. *Anastoechus cervinus*, Loew (1860).

This species is characterised by its entirely black antennae, which have a short first joint, and by the yellow basal comb on the wings.

The British Museum possesses an old, damaged ♂ from S. Africa (*Dr. A. Smith*), which would seem to belong here; the eyes, however, are separated above by the breadth of the ocellar triangle, while in Loew's species they are closer together; the basal comb on the wings, too, is much darker, almost blackish.

58. *Anastoechus erinaceus*, Bezzi.

A very distinct and bristly species, with exceedingly broad frons and with numerous black bristles on head and thorax. Described by me in my memoir on the Bombyliid Fauna of South Africa: there is in the British Museum collection an old and damaged ♀ specimen from S. Africa (*Dr. A. Smith*).

Genus 4. **EURYCARENUS**, Loew (1860).

This peculiar Ethiopian genus is sharply differentiated from any other on account of the deep emargination in the hind border of the eyes, a character which is to be found elsewhere in the Family only in the American genus *Heterostylum*, Macquart. In last-mentioned genus, however, there are no strong bristles on the abdomen and frons of the female; the first antennal joint is longer than the second; and the fourth longitudinal vein ends in the third opposite, or nearly so, to the origin of the upper branch of the latter vein, thus helping to form a single longitudinal vein parallel to the hind border of the wing; this vein is formed by the veins at the base of the third and second posterior cells, and of the second submarginal cell, all these three cells being therefore of subequal size and shape.

The genus *Eurycarenum* shows many peculiarities in the shape of eyes, in the antennae, in the strong development of chaetotactic characters (the frons of the female bearing some pairs of very strong fronto-orbital bristles) and in the venation. Regarding the latter, it must be remarked that the pointed first posterior cell is here very different from that which may be observed in some species of true *Bombylius*, and in *Isocnemus*. While in *Bombylius* it is always the third vein with its inferior branch which reaches the costa, receiving the fourth vein, in *Eurycarenum* it is always the fourth vein which reaches the costa receiving the lower branch of the third, as a kind of cross-vein. In *Heterostylum* it is the third vein which ends in the costa. Notwithstanding these peculiar characters, which give to *Eurycarenum* an isolated position, it may be observed that in general shape; in the bristles on the legs; in the broad, non-protruding face, with its white pubescence; in the presence of the metapleural

tuft; in the paler fourrure on the lower side of the body; and in the very retracted position of the middle cross-vein, the genus shows many affinities with *Anastoechus*.

Hitherto it has been believed that in the Ethiopian Region there was a single, widely spread species of the present genus; but in the rich material originally belonging to the Imperial Bureau of Entomology I have found not less than four well-differentiated species, which are very uniform in general appearance, but may easily be separated as follows:—

- 1 (8). Eyes in ♂ united or closely approximate at one point, and also with upper facets much enlarged; frontal triangle in same sex with white tomentum.
- 2 (3). Eyes in ♂ narrowly separated or in contact at one point, not along a line.
- a (b). Tarsi and tibiae with yellowish ground-colour, tibiae clothed with argenteous scales; thorax clothed with dense, bright fulvous pubescence; abdomen always with median, white, longitudinal stripe; palpi broadly yellow at base; frons of ♀ with 3–4 strong orbital bristles; species of greater size. *laticeps*, Loew.
- b (a). Tarsi, tibiae and palpi quite black; hind tibiae with black scales; abdomen without white median stripe; species of smaller size. *minimus*, Bezzi.
- 3 (2). Eyes in contact for a rather long distance; tibiae and tarsi with black ground-colour, hind tibiae with black scales; thorax with paler, more greyish pubescence; abdomen without white longitudinal stripe; palpi blackish.
- 4 (7). First posterior cell with a rather long stalk, as usual; abdominal segments without argenteous tomentum on hind borders.
- 5 (6). Abdomen with entirely black bristles with only 3 white transverse bands, last of which is interrupted, and with an entirely black tip; postalar bristles black; third antennal joint with narrow base. *melanurus*, sp. nov.
- 6 (5). Abdomen with bristles mainly white, with 4 transverse and entire white bands, and with a white tip; postalar bristles partly yellowish; third antennal joint with broad base. *albicans*, sp. nov.
- 7 (4). First posterior cell almost sessile at end; abdominal segments with narrow bands of argenteous tomentum on hind borders, and, moreover, with white pubescence. *sessilis*, Bezzi.
- 8 (1). Eyes in ♂ widely separated, with small facets of uniform size; frontal triangle of ♂ with golden coloured tomentum; frons of ♀ with only 2 fronto-orbital bristles on each side; palpi and legs quite black. *dichopticus*, sp. nov.

Owing to the fact that the species differentiated above are all very similar in appearance and distinguishable only by means of secondary sexual characters, it may be supposed that they are of recent origin, and inhabit limited faunal areas.

59. *Eurycarenum laticeps*, Loew (1852).

A very robust species, even attaining a length of 14 mm., and readily distinguishable from the others on account of the peculiar coloration of the thorax, abdomen and legs. Originally described from Mozambique and Caffraria, and subsequently recorded from the Orange Free State, Somaliland, W. Nyasa, N. Nigeria and

Kordofan. It is, however, probable that some amount of confusion has occurred with one or other of the species now differentiated for the first time.

In the collection before me there are typical specimens of both sexes from N.-W. Rhodesia : Mazabuka, 3,400 ft., 9 December, 1913, "in house," "on ground," "hovering over vegetation" (*R. C. Wood*); a ♀ from Kenya Colony, on Uganda Railway near M'tito Andei, 7 January, 1912 (the late *Capt. F. C. Selous, D.S.O.*); and some specimens of both sexes from Portuguese E. Africa : Lorënzo Marques, Inyak Island, 15 January, 1907, Marracune and Incanine, 15-22 December, 1906, the ♂ with eyes united (*F. D. McMillan*).

The as yet undescribed ♂* is very like the ♀; the eyes which have the upper facets somewhat enlarged, are very closely approximate, being only separated by a narrow interval which is not broader than the anterior ocellus, while sometimes they are even in contact; the frontal triangle has white pubescence and long, erect, black hairs; the genitalia are black and black-haired.

In the present species all the bristles are black, only those on the hind border of the mesopleura being sometimes yellowish. The front femora have no spines below, or rarely 1-2 very short ones; the middle femora have 2-3 very strong spines; the hind femora have a complete row of 8-11 spines, which are very strong. All the tibiae are clothed with silvery scales, beneath which the ground-colour is yellowish. The cilia on the upper side of the third antennal joint seem to be deciduous, being often wanting.

60. *Eurycarenum melanurus*, sp. nov.

Closely allied to the preceding species, but distinguishable at once by the very different abdominal pattern.

Type ♂, a single specimen from Zanzibar, near town, 5 August, 1911, "in grass" (*Dr. W. M. Aders*); there are also two ♂♂ from N. Nigeria : Bokani, 5 September, 1910 (*Dr. J. J. Simpson*); which are not typical, but have the eyes united for an even longer distance than in the type.

♂. Length of body a little over 12 mm.; wing-expanse 26 mm.

Head black, grey dusted; occiput flattened, with dense but not long hair, which on upper part are of a greyish, and on sides and below of a white colour; borders of eyes, beginning at upper margin of the broad and deep sinuosity, are edged with silvery, scale-like hairs; beard long and white; ocellar triangle deep black, with short, on anterior side very dense, black hairs. Eyes dark reddish-brown, in contact for a space a little shorter than distance between ocelli, with upper facets enlarged. Frontal triangle broad, but slightly convex, with long, erect, black hair and short, partly white, partly yellowish, pubescence; face broad, very

* Loew, *Wien. entom. Monatschr.*, Bd. vii, p. 13 (1863), devotes only a few words to it.

little projecting in middle over mouth edge, with short hairs, which are white and dense on sides near eyes, erect and black in middle, while below them there is golden tomentum; cheeks clothed with argenteous hair as far as lower corners of eyes. Antennae long, entirely black; first two joints of equal length, and clothed with short, entirely black hair; third joint narrow at base, elongate and gradually tapering, with 5-7 short cilia above on basal half, and with a thick terminal style, which is biarticulate, as long as second antennal joint and rather obtuse at its yellowish-coloured end. Mouth opening broad, rectangular,



FIG. 6.—*Eurycarenum melanurus*, sp. nov. ♂. $\times 3\frac{2}{3}$.

with pale yellowish borders; proboscis stout, entirely black 5.5 mm. long; palpi bare, black, with broad yellow base. Thorax entirely black, clothed on back with short, dense, fulvous hairs, which are paler on pleurae and become white on breast; metapleural tuft white; all bristles black, notopleural ones numerous but short and supra-alar very long; mesopleural bristles yellow, concealed among fourrure; there is also a complete row of bristles on hind border of dorsum in front of scutellum. Latter dark red, blackish towards base, clothed with fulvous hair like that on thorax, and with 6-7 pairs of very strong and long black bristles on hind border, middle pair being decussate. Squamae yellowish, with brown borders, and with short but dense yellowish fringes; halteres brown, with whitish knobs. Abdomen entirely

black, oval in shape and rather convex; first segment clothed with erect, soft, white hair on sides and on hind border below scutellum; second and third segments have in middle a complete band of white dust, expanded on sides, and clothed with long, erect, white hair, while on black parts there is black hair; fourth segment with a similarly white-dusted and white-haired band, which is broadly interrupted in middle, where it is clothed with dense erect, black hair; remaining segments entirely clothed with dense black hair, which forms a broad apical black tuft. On hind borders of all segments there are complete rows of very numerous, strong black bristles, which are only a little longer than fourrure; on first segment only lateral bristles are of a whitish colour. Venter with white hair on basal half, with a black spot on each side, and on apical half black hair; bristles entirely wanting. Genitalia black, dark red externally, densely clothed with short black hair. Legs stout, quite black; femora clothed with argenteous scales, those of hind legs with black scales at tips; hind tibiae black scaled and very strongly spinose; all spines black, and only front and middle femora have some white hairs below at base; front femora with 0, middle femora with 2-3, hind femora with 14-15 spines below; claws black; pulvilli whitish, as long as claws. Wings hyaline, extreme base yellowish, with a broad black spot; praealar scale velvety black, and in close proximity a tuft of argenteous hair; basal comb very little developed, with short black bristles and golden tomentum; alula hyaline, with short yellowish fringe. Veins black, reddish and yellow at base; venation typical; discoidal cell very acute at end, its terminal cross-vein being only one-third as long as middle one.

61. *Eurycaenus albicans*, sp. nov.

This smaller and whiter species is easily distinguishable from all the others owing to its comparatively short and broad third antennal joint.

Type ♂, and an additional specimen of same sex from Gambia: Farafeni, 11 March, 1911 (*Dr. J. J. Simpson*).

♂. Length of body 9.5-10.5 mm.; wing-expanse 21-24 mm. Closely allied to preceding species, so that foregoing description will apply to present species also. Eyes likewise in contact for a short distance; frontal triangle with golden pubescence only in middle and at base; third antennal joint ovate, broader than second; its short, attenuate terminal portion as long as style. Posterior supra-alar bristles yellowish, with only one or two black. Scutellum blackened in middle. Squamae with white fringes. On abdomen, white band on second segment narrow, and followed by a broad black band; bands on third and fourth segments complete, extending right across; fifth segment entirely black, but narrow; sixth entirely white-haired. Abdomen short and rotundate, segments being coarctate; bristles mainly white, but

black on middle of third and fourth and on whole of following segments. On venter, apical black tuft interrupted by white hairs on each side; genitalia black and black-haired. Legs as in the preceding species but less spinose, hind femora with only 7-8 spines below. Wings agreeing with those of foregoing species in shape, neurulation and coloration.

62. *Eurycarenum dichopticus*, sp. nov.

Readily distinguishable owing to the golden tomentose frontal triangle, entirely black palpi and legs, and the widely separated eyes of the ♂.

This species seems to be more common than *E. laticeps* (with which it was confounded in the past) chiefly in Central Africa and on the West Coast. Type ♂ and type ♀ from Kenya Colony: Makindu, 16 December, 1911 (*Dr. S. L. Hinde*); numerous specimens of both sexes from N. Nigeria: Bakani, September-October 1910 (*Dr. J. J. Simpson*); a ♂ from Uganda Protectorate, Western Busoga, between S.-E. shore of Lake Kioga and Kakindu, 3,500 ft., 22-23 August, 1911 (*Dr. S. A. Neave*); a ♀ from N. Nigeria, Shonga, 1 April, 1912 (*Dr. J. W. Scott Macfie*). There are numerous other specimens from N. and S. Nigeria, Ibadan, Minna, Bakani, Dumaji, March-September, 1913 (*Dr. W. A. Lamborn*, *Dr. J. W. Scott Macfie*, *Dr. J. J. Simpson*); a ♀ from Nyasaland, Mt. Mlanje, 8 January, 1913 (*Dr. S. A. Neave*); a very small ♀ measuring only 7 mm. in length, from Kenya Colony (*Dr. S. L. Hinde*) seems also to belong to this species.

♂♀. Length of body 9-11 mm.; wing-expanse 19-23 mm.

Head and its vestiture as described for *E. melanurus*, with the following peculiarities. Eyes in ♂ widely separated, frons at narrowest point being as broad as ocellar tubercle, which is very large; at this point there is a transverse furrow, which makes a sharp division between black ocellar and golden frontal triangle; eyes with upper facets not larger than those below. In ♀ frons one and a half times as broad as eye, with only two pairs of strong fronto-orbital bristles on each side. Frontal triangle in ♂, below usual erect black hairs, clothed with dense golden pubescence, like that on frons of ♀, only anterior angle on each side having a small spot of argenteous pubescence, in continuation of that on cheeks. Antennae as in *E. melanurus*; palpi smaller and entirely black. Thorax and scutellum as in *E. melanurus* or *E. laticeps*, but fourrure less bright fulvous, and scutellum almost entirely black; squamae with white, not yellow, fringes. Abdomen with pattern different from that in *E. laticeps*; first segment with white erect hair; second with median transverse band as in *E. albicans*; third and fourth segments with complete bands of white dust and white hair, though fourth with anterior band of black hair more developed; fifth segment black-haired, with a single white spot in middle of hind border; sixth segment white-haired; ♂ genitalia black and black-haired; anal tuft in ♀ luteous; sur-

rounded on entire last segment with black hairs. Bands on third and fourth segments may be broadly interrupted in middle, and spot on fifth may be extended forwards to form a median stripe, but pattern characteristic of *E. laticeps* is never developed. Venter as in *E. melanurus*, but apical black patch adorned with a white tuft on each side. Legs quite black, scaled and spined as in *E. melanurus*; wings likewise.

Genus 5. **SISYROPHANUS**, Karsch (1886).

This Ethiopian genus, as pointed out by its author, shows a certain affinity with the preceding one, but the eyes are without the peculiar emargination in the hind border. The shape of the first posterior cell is very similar; and although the author states that in the genotype it is the third vein and not the fourth, that reaches the hind border, in all the species known to me there is no doubt that the opposite occurs. *S. leptocerus*, *pyrrhocerus* and *minor*, all have in common an elongate, cylindrical body; the type species, however, is of a broader shape, like the two other new species here described. These species are evidently allied to the species of the new genus *Gonarthrus*, belonging to the Phthiriinae but originally confused with *Dischistus*, showing likewise a bare metapleura; but they are at once distinguished by the venation, the shape of the palpi and the projecting, absolutely bare and exceedingly shining face. The latter character is to be found in some species of *Dischistus*, and especially in some neotropical species of *Sparnopolius*, from which the present genus is readily distinguishable by the closed first posterior cell.

The following should be added to the characters of the genus: Head broader than thorax; eyes in ♂ in contact for a considerable distance; frons in ♀ very broad; hind femora without bristles below; wings very short and destitute of a basal comb.

The known species may be distinguished as follows:—

- 1 (6). Body rather broad and of a more oval shape; face shining, but less produced, and hidden between long hairs on sides.
- 2 (5). Antennae and abdomen entirely black; legs mostly or wholly black.
- 3 (4). Legs black, with yellow femora; wings with base and costal cells infuscated; 13 mm. long. *homeyeri*, Karsch.
- 4 (3). Legs entirely black; wings only with a faint yellowish tint towards extreme base; 8 mm. long. *neavei*, sp. nov.
- 5 (2). Antennae with third joint red; abdomen red, with a black basal band on each segment; legs entirely red; wings quite hyaline; 13 mm. *abdominalis*, sp. nov.
- 6 (1). Body narrow and elongate, of a more cylindrical shape; face very prominent, shining, quite bare.
- 7 (8). Third antennal joint red; legs entirely yellow and with yellowish spicules on tibiae. *pyrrhocerus*, Bezzi.
- 8 (7). Third antennal joint black; legs with black femora, and with black spicules on tibiae.
- 9 (10). Third antennal joint narrow and quite black; 11 mm. long. *leptocerus*, Bezzi.
- 10 (9). Third antennal joint broad and with a narrow reddish basal ring; 6-7 mm. in length. *minor*, sp. nov.

63. *Sisyrophanus neavei*, sp. nov.

Closely allied to *S. homeyeri*, Karsch, but at once distinguished by much smaller size, entirely black legs and hyaline wings.

Type ♂, type ♀, and two additional ♀♀ from Belgian Congo: Lualaba R., 2,500–4,000 ft., 15 May, 1907 (*Dr. S. A. Neave*).

♂♀. Length of body 8–8.5 mm.; of wing 6.5–7 mm.

Head entirely black and very large; much broader than thorax, and differently shaped in the two sexes; in ♂, owing to greatly developed eyes, it is only one and a half times as broad as high, while in ♀ it is twice as broad as high; eyes of ♂ have upper facets much enlarged and are in contact for a long distance, bare frontal triangle being thus equal in size to ocellar one; in ♀ eyes are separated by very broad rectangular, shining black, highly polished frons. Occiput flat, clothed with whitish or pale yellowish hairs, which are not longer near borders; ocellar triangle of ♂ and frons of ♀ with erect black hairs. Face short, bluntly conical but not much produced, much broader in ♂ than in ♀, shining black and bare, but hidden beneath long and dense hair on sides and on under side of basal joints of antennae. Jowls very broad, with long whitish hair directed forwards; oral opening relatively narrow, in ♂ with yellow borders behind; beard pure white colour; palpi black, thickened, with a tuft of dense and long whitish hair; proboscis entirely black, 4 mm. long. Antennae black; first joint not much thickened, three times as long as globular second joint, with dark hairs above, and with long and dense white hairs below; third joint linear, with sides of equal length, as long as first two joints together, with a narrow yellowish ring at base, and with a less distinct, very short terminal style; it appears to bear a certain number of hairs along its upper border. Thorax and scutellum entirely black, clothed with dense and long whitish-grey hairs, which are pure white on pleurae and below; bristles thin, hair-like, black; metapleura bare, but partly hidden beneath the long mesopleural tufts; squamae dirty whitish, with long whitish fringes; halteres yellowish. Abdomen oval black, clothed like back of thorax, with rows of thin dark hairs on hind borders of segments; in ♀ there is a yellowish anal tuft and apparently also yellowish spines; ♂ genitalia small; venter with white hairs. Legs quite black, with whitish hairs and scales; hind femora unarmed below; tibiae beset with long, black spicules; pulvilli dark yellowish, as long as claws. Wings narrow and short, hyaline, slightly yellowish at extreme base; veins yellowish at base, but darkened outwardly; second longitudinal vein straight, suddenly but gently curved upwards near end; upper branch of cubital fork forming a rounded bend at base; first posterior cell very acute outwardly and very shortly stalked; terminal vein of discoidal cell shorter than discal cross-vein, which is situate beyond middle of discoidal cell; anal cell broadly open.

64. *Sisyrophanus abdominalis*, sp. nov.

Very like the genotype in size and general appearance, but differing in the very different coloration of the antennae, abdomen, legs and wings.

Type ♂, and an additional specimen of same sex from Kenya Colony: Mbuyuni, Serengetti Plains, 24 May, 1916 (*T. J. Anderson*).

♂. Length of body 12–13 mm.; of wing 9–10 mm.

Head black, only a little broader than thorax, in front view about twice as broad as high; occiput slightly concave, clothed with whitish hairs, which near borders are short and dense, and below merge into beard, which is long and quite white. Eyes with upper facets enlarged in contact for a space as long as ocellar triangle, which is clothed with dark hairs; frontal triangle depressed, bare in middle, about twice as large as ocellar triangle, with a tuft of greyish hair on sides below. Face shining black, conical in shape but not much produced, hidden by very dense hair on lower side of antennae and on sides of face itself; these hairs are white, and are continuous with those clothing jowls, thus forming a kind of brush; jowls descending but little below eyes; mouth opening rather broad, with yellowish borders to posterior half; proboscis black, 7–8 mm. long; palpi black, rather thick, with long reddish or whitish hairs on outer surface. Antennae rather wide apart at base; first joint black, grey dusted, not much thickened, with white hairs above, and below with very dense and long reddish tufts; first joint more than three times longer than likewise black second joint; third joint red, as long as first two joints together, cylindrical, thickened in basal half, gradually tapering to tip, and there with a minute terminal style; third joint narrowly black at end, and with a narrow yellowish ring at base; it is quite bare on upper surface. Thorax and scutellum entirely black, but densely grey dusted; they are clothed with dense greyish hairs, those on pleurae being white; scutellum with thin black bristles on hind border, remaining bristles on thorax whitish, only postalar ones black, but all very thin and hair-like; metapleura bare, but hidden below mesopleural tufts. Squamae yellowish, with long whitish hair; halteres whitish, with yellow stalks. Abdomen elongate oval; first segment black, with narrow red hind border; second to fifth segments of equal length, red, each with a black basal band, which is triangularly produced behind in middle, apex of each triangle approaching hind border of segment, but leaving a narrow red margin; last segment entirely red, with a narrow black median stripe; genitalia red with black base; venter entirely red, unspotted, with white hair, denser on sides; on dorsum abdomen is clothed with greyish hair, and with white hair on sides, with dense complete rows of black bristly hairs on hind borders of segments. Legs reddish, only coxae, the

trochanters and last two or three joints of tarsi being black; femora with white hairs but no scales, those of hind pair with some stiff hairs on under side, but not really bristly; spicules on tibiae long, numerous and black; claws red with black tips; pulvilli dark yellowish. Wings quite hyaline, with only a slight yellowish tint in praebasal cells; veins yellow, darkened in terminal half; venation normal; stalk of first posterior cell, which is acute outwardly, rather long; terminal cross-vein of discoidal cell half as long as length of discal cross-vein; anal cell wide open.

65. *Sisyrophanus minor*, sp. nov.

A narrow, elongate species, closely allied to *S. leptocerus*, Bezzi, but smaller and distinguished by the broad third antennal joint, which shows a yellow ring at its extreme base.

Type ♂, and an additional specimen of same sex from N. Rhodesia: Refunswa, 25-26 April, 1910 (the late *O. C. Silverlock*).

♂. Length of body 6-7 mm.; of wing 4-5 mm.

Head black; occiput flattened, even a little concave towards middle, clothed with short but dense hair, which is greyish above and whitish below; beard rather long, whitish; ocellar triangle very small, deep black, with short black hair; frontal triangle even smaller than ocellar, deeply excavate and grey dusted. Face shining black, forming a prominent conical projection, with a few, hardly distinguishable pale hairs on sides; cheeks below and peristoma very narrow, bare, shining black. Eyes large in contact for a long distance, with upper facets much larger than lower. Antennae black, long, horizontally porrect; first joint shining clothed with short black hair, somewhat thickened, more than thrice as long as second, which is globular and dull; third joint a little longer than the first two joints together, rather broad but strongly flattened from side to side, not attenuate at tip, ending bluntly, with a short style on upper edge; basal ring of third joint yellow, remaining portion deep black. Proboscis quite black, 4-4.5 mm. long; palpi black, straight, with long white hairs. Thorax and scutellum deep black thickly clothed with long, thin greyish hair, which viewed from in front shows silky white gleams; hair on pleurae and breast paler, but not white; no distinct bristles. Squamae dirty white, with long greyish hair on borders; halteres white, with yellowish stalks. Abdomen narrow, elongate, not broader than thorax, entirely black, somewhat shining and clothed with very long thin hair like that on thorax, with sparse pale tomentum and with very thin, inconspicuous, dark, bristly hairs on hind borders of segments. Venter black, with short, whitish-grey pubescence; genitalia with upper lamella dark brown and lower spines yellow. Legs reddish-yellow, coxae, femora except tips (more broadly in case of hind pair), and tarsi except at base, black; femora with argenteous scales and whitish hair, but no

spines; this applies even to rather thin posterior femora, which show only some long hairs below at base; spicules on tibiae and tarsi well developed, all black, even spurs at end of middle tibiae; claws black, with reddish base; pulvilli dirty whitish, a little shorter than claws. Wings rather short, quite hyaline, with yellowish veins; no basal comb; alula very little developed, as in *Gonarthus*; marginal cell dilated at end; upper branch of third vein bent in middle and near base; middle cross-vein long and oblique, placed beyond middle of discoidal cell; first posterior cell pointed, and with a short stalk, fourth and not third vein ending in costa; discoidal cell rather acute at end, its terminal cross-vein being shorter than middle one; second posterior cell triangular; anal cell broadly open; converging veins forming apex of second basal cell of equal length.

Genus 6. **DISCHISTUS**, Loew (1855).

This genus is represented in the Ethiopian fauna by a great many species, some of which show very remarkable structural differences; it would seem also that the two sexes of the same species are often very different, which is probably the reason that so many species have been described from a single sex only. With the separation of the genus *Gonarthus*,* all the species here described or referred to have the following characters in common: a rotundate or oval body; one-jointed palpi; metapleura usually hairy; marginal cell dilated at the end; basal comb on the wing very small or wanting; and the alula small but distinct. They, however, vary in the shape of the head, in the hairiness or otherwise of the face, in the eyes of the ♂ being united or separated, in the position of the middle cross-vein, etc. It was stated by Loew in 1855, and repeated by Becker in 1913, that the Ethiopian species belonging to the present genus have no spines on the under side of the hind femora; but this applies only to certain species of the *D. mystax* group, the others having these spines well developed.

On the basis of important characters and general appearance, the Ethiopian species of *Dischistus* can be divided into the following five groups:—

- 1 (4). Metapleura bare; hind femora without spines on under side, but sometimes with many stiff hairs; all spicules on tibiae black; eyes in ♂ separated, or approximate only at one point; first antennal joint distinctly thickened; alula little developed.
- 2 (3). Face with dense mystax; occipital borders with black hair; middle cross-vein beyond middle of discoidal cell, which is elongate or narrowly trapezoidal; tibiae yellow with very numerous, long spicules; frons in ♀ very broad; alula small, nearly linear, not fringed.

Group *D. mystax*.

* This new genus, in which are placed species like *D. cylindricus*, Bezzi, etc., is to be found in the Phthiriinae, see p. 109.

- 3 (2). Face shining black, entirely without hair; occipital borders without black hair; middle cross-vein before middle of discoidal cell, which is short and broadly triangular; tibiae black, with a few short spicules; frons in ♀ narrow; alula small, but rounded and fringed.

Group *D. aurifluus*.

- 4 (1). Metapleura hairy; hind femora on under side with spines, which are as strong as those exhibited by preceding genera; if in some cases these spines are indistinct, spicules on tibiae are yellow; first antennal joint not thickened; alula strongly developed, broad, rounded, with a long fringe.

- 5 (6). Spines and spicules on legs entirely yellow; eyes in ♂ separated; frons in ♀ usually broad; middle cross-vein much before middle of discoidal cell, very rarely near middle.Group *seriatus*.

- 6 (5). Spines on legs entirely black; eyes in ♂ united for a long distance; frons in ♀ narrow; middle cross-vein usually placed on middle of discoidal cell, or a little before it.

- 7 (8). Face shining black, with a few hairs on sides; wings very long; body mainly black-haired, with scales of various colours.

Group *lepidus*.

- 8 (7). Face dusted, with the mystax strongly developed; wings of usual size; body pale or dark-haired, but without scales. ...Group *minimus*.

Group 1. *D. mystax*.

The species of the present group are characteristic of the South African fauna; they are larger and of more robust shape than the rest, suggesting true *Bombylius*. The antennae are rather wide apart at the base, with the first joint thickened; the metapleura is entirely bare; the legs have dense spicules on the tibiae and very long pulvilli. The wings are short, with the first posterior cell narrowed at the end and the second posterior cell triangular; the middle cross-vein is situate on the last third of the discoidal cell; the alula is very small, not fringed, like that of *Gonarthrus*. I have seen three species, which may be distinguished as follows:—

- 1 (4). Proboscis short, not longer than thorax; palpi concealed; femora more or less black, with numerous black rigid hairs below; eyes in ♂ widely separate.
- 2 (3). Face with a mainly black mystax; femora yellow, narrowly black at base; third antennal joint spindle-shaped, broad in middle and attenuate at both ends.*mystax*, Wied.
- 3 (2). Face with a yellow mystax, only on sides with black hairs; femora black, with yellow tips; third antennal joint linear, pointed at tip.
capito, Loew.
- 4 (1). Proboscis long, as long as body; palpi long and plumose; femora entirely yellow, without black hairs below, or with a few only on hind pair; eyes in ♂ meeting at one point.*plumipalpis*, Bezzi.

66. *Dischistus mystax*, Wiedemann (1818).

A broad, yellowish-haired species of considerable size, easily recognisable by the black mystax and by the peculiar shape of the third antennal joint.

Originally described from the Cape of Good Hope, and re-described by Loew from the same locality; *Bombylius heterocerus*, of Macquart, is without any doubt identical with this species.

The British Museum possesses a single female specimen from the Cape.

Group 2. **D. aurifluus.**

This group is erected here for an aberrant species, of which only the female is known. It is allied to the species of the preceding group, but has a narrow frons, very different venation and a completely bare and shining face. As in the foregoing group, the alula is small, but it has a short fringe, and is not straight-edged. The group is evidently intermediate between the first and the third.

67. **Dischistus aurifluus**, sp. nov.

A rather aberrant species of medium size, distinguished by dense golden pubescence on the entire body, black legs with unarmed hind femora, peculiar venation, and especially by the bare, shining black face and cheeks.

Type ♀, from the Cape of Good Hope, without more precise locality.

♀. Length of body 8 mm.; of wing 7 mm.; wing-expanse 17 mm.

Head deep black, clothed with dense golden tomentum on frons and occiput; latter somewhat strongly developed and swollen, with short yellowish hair, which becomes shorter below, and passes into sparse and paler beard; no black hairs on upper occipital border; frons narrow, only one-fifth as broad as head, with sparse, short, erect pale hair, like that on occipital tubercle. Face and cheeks bare, black, very shining, with only a few yellowish hairs beneath on borders of eyes. Antennae rather long and strong, approximate at base, entirely black; first joint somewhat thickened, dark grey dusted, with short, sparse yellowish hair, like second, which is as long as one-third of preceding joint; third joint narrower than first, deep black, as long as first two joints together, narrowed towards middle, with terminal half linear and provided with a well-developed, 2-jointed terminal style. Mouth opening broad; proboscis entirely black, short and strong, 3.5 mm. long, shortly but distinctly pubescent at end. Thorax and scutellum deep black, with dense golden pubescence and short yellowish hair, without distinct bristles; on pleurae, only mesopleura clothed with dense hair, remainder and even metapleura bare and dark grey dusted, without golden tomentum. Squamae dirty yellowish, with yellow fringes; halteres pale yellow. Abdomen deep black, depressed, rounded, with hair and pubescence like that on thorax; hind borders of segments with black bristles, only last segments with some yellowish bristly hairs, which are longer than remainder; venter black, clothed with short pale yellowish hair; genitalia with broadly rounded lamellae, and densely golden pubescent. Legs entirely black, with sparse yellowish hair on femora and black

spicules on tibiae; all femora unarmed, those of hind legs beneath with only a row of stiff yellowish hairs; claws black, pulvilli dirty yellowish, nearly as long as claws. Wings short, perfectly hyaline, with yellow veins; no basal comb; alula very small, but rounded and with a short yellow fringe. Marginal cell much dilated at end; middle cross-vein situate on first third of discoidal cell, which is short and triangular; first posterior cell not narrowed at end; upper branch of the third vein gently curved, leaving main stem at right angles; anal cell wide open.

Group 3. *D. seriatus*.

This group also is characteristic of the South African fauna, being almost entirely wanting in the centre of the Ethiopian Region; it corresponds to the *parisus*-section of the *minor*-group of the genus *Bombylius*. The species are rather numerous, of medium or even very small size; they have the eyes of the ♂ separated, and the frons of the ♀ usually very broad; the antennae are contiguous at the base, with the first joint not or very little swollen; there are no black hairs on the occipital borders; the mystax is well developed; the pleurae are somewhat hairy, with a usually well-developed metapleural tuft; the legs have spines on the femora and yellow spicules on the tibiae. The wings are usually long, with often rather well-developed basal combs; the alula is broad, strongly developed, rounded in shape and provided with a fringe; the upper branch of the third vein is strongly bent at the base; the middle cross-vein is placed usually before the middle, or exceptionally on the middle, of the discoidal cell, which is generally elongate and truncate at the end; the first posterior cell is not narrowed, nor is the second posterior cell triangular.

The species known to me, the types of which are mainly in the South African Museum, can be distinguished as follows:—

- 1 (2). Wings very short, with middle cross-vein situate on middle of discoidal cell, which is short, broad and triangular in shape; basal joints of antennae, as also legs, entirely reddish-yellow, like scutellum; pulvilli long. *rubicundus*, Bezzi.
- 2 (1). Wings of usual length or very long, with middle cross-vein situate much before middle of discoidal cell, which is variable in shape but usually elongate; base of antennae, legs and scutellum never all at same time reddish-yellow; pulvilli usually much shorter than claws.
- 3 (4). Antennae, scutellum and legs entirely black; body with long argenteous hair, and beneath this with dense golden-yellow tomentum; discoidal cell short, as long as broad. *niveus*, Macq.
- 4 (3). Legs in great part yellow, at least tibiae; discoidal cell elongate, often very long and many times longer than broad.
- 5 (10). Proboscis entirely black; frons in known ♀♀ rather narrow.
- 6 (9). Scutellum black; proboscis short; femora not black striped beneath; wings of usual size, hyaline or only narrowly infuscated at base and on fore borders; discoidal cell not twice as long as broad.
- 7 (8). Femora entirely yellow, without distinct spines below; wings with basal comb fairly well developed. *ovatus*, Bezzi.

- 8 (7). Femora in great part black, with distinct spines on hind pair; wings with no distinct basal comb. *seriatus*, Wied.
- 9 (6). Scutellum red; proboscis long; femora with black stripes below; wings very long and broad, broadly infuscated in middle, with discoidal cell almost thrice as long as broad, and with a well-developed basal comb. *vittipes*, Bezzi.
- 10 (5). Proboscis red above, at least near base; frons in known ♀♀ very broad.
- 11 (14). Scutellum red; body grey, with pale yellowish or whitish pubescence.
- 12 (13). Middle femora spinose beneath; basal comb of wings developed; discoidal cell without appendix. *variegatus*, Macq.
- 13 (12). Middle femora without spines; wings with discoidal cell provided with appendix below, and without distinct basal comb.
- 14 (11). Scutellum, like rest of body, deep black; fourrure on body dark-reddish; wings with three fuscous spots. ... *tripunctatus*, Macq.

rufirostris, sp. nov.

68. *Dischistus rufirostris*, sp. nov.

Closely allied to *D. variegatus*, Macq., but smaller, and distinguished by less spinose legs, and by the presence of an appendix on the discoidal cell.

Type ♀, a single specimen from N.-W. Rhodesia: Kafue, 3,100 ft., 28 August, 1913, "hovering near wild composite plant" (*R. C. Wood*).

♀. Length of body 5.5 mm.; length of wing 6 mm.; wing-expanse 14 mm.

Head broader than thorax, black on occiput, pale reddish-yellow on frons and face, but everywhere clothed with dense grey dust; occiput well developed and broad, but rather flat, clothed with rather long, pale yellowish hair, which become very short on sides and below; on ocellar tubercle and on each side of vertex near eyes there is tuft of black hairs; frons exceedingly broad, twice as broad as eye, almost bare in middle, with sparse pale yellowish hair on sides and with two tufts of black hairs on each side; face very broad, almost bare below antennae, with pale yellowish-white shining hairs below and on cheeks, forming a well developed but not dense mystax. Antennae short, entirely black, but with basal joints grey dusted, and with third joint a little reddish below; first joint thrice as long as second, clothed with whitish hairs, which are short on upper side and longer beneath; third joint as long as first, and as broad as second at base, gradually tapering to an obtuse, thickish point, with a minute style at end. Proboscis 3 mm. long, yellowish-red, with black tip; mouth opening broad, with pale yellow borders. Thorax black, dull, dark grey dusted, with two longitudinal pale stripes; thorax clothed with pale yellowish, rather short hair, showing whitish gleams when viewed from in front; bristles very thin and whitish; pleurae yellowish dusted, with short, sparse hairs, but with a dense and long metapleural tuft. Scutellum red, with more than basal half black, entirely grey dusted, clothed with hair like that on

thorax and with thin, whitish bristles on hind border. Squamae dirty whitish, with yellowish borders and whitish fringes; halteres pale yellow, with whitish knobs. Abdomen ovate, entirely black, grey dusted and pale yellowish tomentose; hair on abdomen like that on thorax, but limited to hind part of each segment, and therefore disposed in rows, like those on *D. rubicundus*; long black bristles on hind borders of the last segments, forming distinct rows broadly interrupted in middle. Venter black, grey dusted and white-haired. Legs pale yellowish, but front and middle femora have a black stripe beneath, which, however, is not well defined; femora white pilose, those of hind pair bearing four very long but thin, pale yellowish bristles below; spicules on tibiae pale yellowish, very thin and sparse; tarsi blackened at tips; claws black, with yellow bases; pulvilli not developed. Wings long and narrow, hyaline, iridescent, faintly infuscated at base and on fore border as far as first basal cell; middle cross-vein and that at end of second basal cell faintly margined with fuscous. Upper branch of third vein bent at base; middle cross-vein placed on first third of discoidal cell, which is long, obtuse at end, and has in middle of outer lower vein a short stump projecting into third posterior cell; first posterior cell narrowed at end. Veins black, yellowish towards base; no distinct basal comb; alula broad, rounded, faintly yellowish-grey, pale fringed.

Group 4. *D. lepidus*.

This group seems to be more common in the centre of the Ethiopian Region, and I have seen no specimens from the south. Among the diagnostic characters of the group are:—the long, curved proboscis; the shining black face, which has a sparse mystax confined to the sides and to the lower part of the cheeks; the but slightly developed occiput, which bears very short hair on the borders; the junction of the eyes of the ♂ for a long distance, and the narrow frons of the ♀; the long and linear third antennal joint; the black body, which is clothed with black and argenteous pubescence, and is often adorned with scales of various metallic colours; the well-developed meta-pleural tuft; the usually entirely black legs, which bear black spines and spicules, and are very long, the first joint of the front tarsus being especially elongate; the hind femora being spinose beneath; the long pulvilli; and lastly the exceedingly long and narrow wings, which have no distinct basal comb, but possess a well developed, rounded and fringed alula, a not very abruptly bent upper branch of the third vein, a long and acute discoidal cell with the middle cross-vein placed half-way along it, a first posterior cell narrowed at the end and therefore a somewhat triangular second posterior cell, and an anal cell narrowed at the distal extremity. The species before me can be separated as follows:—

- 1 (6). Halteres black in both sexes; in ♂ hairs on face and on back of thorax black.
- 2 (3). Body in both sexes densely clothed with green and bluish-metallic scales; mesopleural and metapleural tufts in both sexes white; fourth abdominal segment with a tuft of white hairs on each side.
gemmeus, sp. nov.
- 3 (2). Body in both sexes destitute of such scales, only with argenteous tomentum at end of abdomen; mystax and pleurae with black hair in ♂ and white in ♀.
- 4 (5). Occipital hair entirely black; wings wholly hyaline; first joint of front tarsi shorter than tibia; proboscis shorter than body.
lepidus, Loew.
- 5 (4). Occipital hair bright fulvous; wings infusated; first joint of front tarsi as long as tibia; proboscis as long as body. . . *nucalis*, sp. nov.
- 6 (1). Halteres whitish in both sexes; mystax and thoracic hair whitish or yellowish in both sexes; abdomen of ♂ clothed with argenteous tomentum from second segment to end. *farinosus*, sp. nov.

69. *Dischistus gemmeus*, sp. nov.

A magnificent species, distinguished from any other by the brilliant metallic scales on the entire body.

Type ♂, type ♀, and three additional ♀♀ from Nyasaland Protectorate, 1909 (*Dr. S. K. Norris*); one ♀ from Fort Johnston, 18 March, 1915 (*Dr. W. A. Lamborn*); some further specimens of both sexes from Nyasaland, Mt. Mlanje, 17–26 December, 1912 (*Dr. S. A. Neave*). The latter specimens are smaller, measuring only 6–7 mm. in length, while the others are 7·5–8 mm. long.

It is very probable that the present species is the ♀ of *D. lepidus*, Lw., described with doubt from Swakop by Loew, who recorded two forms, one with black, the other with pale halteres; in the present species the halteres are black in both sexes, and the metallic scales are equally developed in both, but in badly preserved specimens they are partly rubbed off.

♂♀. Length of body 6–8 mm.; length of wing 7·5–10 mm.; wing-expanse 17–23 mm.

Head black, rounded shape, its lower part greatly developed, and therefore mouth opening more perpendicular than in allied species. Occiput not developed, rather concave, deep black but with metallic scales along eye-borders, and with sparse white tomentum on lower orbits; near eye-borders it is practically bare, bearing short, whitish hair only towards middle. Ocellar tubercle deep black, and black-haired. Eyes in ♂ large, rounded, occupying almost entire head, with upper facets slightly but distinctly larger than remainder; eyes in ♂ united for a space longer than vertical triangle, and a little depressed along this line; frontal triangle deeply sunken, very small, only a little broader than vertical one, black, dull, grey or whitish dusted, bare, with only a few short black hairs near antennae. Eyes in ♀ comparatively large and not very wide apart, frons being about as broad as one-fifth of breadth of head; frons somewhat convex in middle, shining black and bare, with only a few hairs near eyes, but immediately behind antennae it is depressed and

bears a transverse band of metallic scales, with some short and erect black hairs. Face in both sexes short and narrow, not very prominent, shining black and bare, bearing only sparse hair on sides forming a very poor and almost indistinct mystax, black in ♂, paler or even whitish in ♀; cheeks very narrow, with some white dust beneath. Chin broad, whitish dusted and bearing a rather long white beard. Antennae approximate at base, entirely deep black; first joint not thickened, twice as long as second, with less numerous black hairs; third joint very long, about twice as long as the first two joints together, linear, of uniform thickness throughout its entire length, obliquely truncate at tip, with a short but rather thick terminal style. Proboscis entirely black, 3·4·5 mm. long, distinctly bent upwards; palpi black, somewhat clavate, clothed with black hair. Thorax and scutellum deep black, with metallic scales, which are greenish on back and bluish on pleurae; hair of moderate length, black, a little paler in ♀; in both sexes pleurae have white hair on meso- and metapleurae; all bristles black, notopleural ones being very strong and those on postalar calli and on hind border of scutellum very long and thin. Halteres black in both sexes, stalks being sometimes yellowish beneath. Squamae light brownish, with yellow borders and white fringes. Abdomen elongate, conical in ♂, a little broader in ♀; ground-colour black, somewhat shining; abdomen finely punctulate, and clothed in well preserved specimens with metallic scales; pubescence is rather sparse, blackish and deciduous; on hind borders of segments there are simple rows of bristles, which are all black; first segment clothed with dense, erect, white hair; fourth segment has on each side a broad spot of white tomentum, clothed with white hair; ♂ genitalia black, and black-haired, like lamellae of ♀. Venter black, with metallic scales and whitish hair. Legs entirely black; coxae with metallic scales and long white hairs; femora whitish tomentose, with sparse and short pale hair below, and having 5-6 black spines on hind pair only; tibiae with black spicules, those of front pair very minute; front tarsi with last four joints a little thickened and shortly ciliate beneath, first joint a little shorter than tibiae; claws black; pulvilli dirty whitish, as long as claws. Wings greyish hyaline, slightly infuscated at extreme base and in costal and first basal cells; shape and venation of wings typical for section; costa at base bearing short black cilia and metallic scales; veins are dark yellowish, becoming paler towards base; apical cross-vein of discoidal cell a little shorter than middle cross-vein; alula greyish hyaline, pale fringed.

70. *Dischistus lepidus*, Loew (♂ only).

A black and black-haired species, with entirely black occipital hair, apical half of abdomen argenteous, and hyaline wings.

Loew described the ♂ from Caffraria; the British Museum

possesses a single ♂ from Nyasaland Protectorate: S. Nyasa, Nkudzi, 5 May, 1908 (the late *Capt. Hallam Hardy, R.A.M.C.*).

Bombylius argyropygus of Wiedemann, the name of which would suggest that it is related to the present species, has yellow legs and thus seems to belong to the *seriatus*-group. Loew's description is such as to place the characteristics of *D. lepidus* beyond dispute. The shape of the head and eyes are as in the preceding species; palpi black and ciliated; mesopleural and metapleural hair entirely black; squamae blackish, with dark fringes; coxae with black hair; only hind femora with spines, these being six in number; first joint of front tarsus shorter than tibia.

71. *Dischistus nucalis*, sp. nov.

Closely allied to the preceding species, but distinguished by greater size, more elongate legs and wings, and by the tawny occipital hairs and intensively infuscated wings.

Type ♂, type ♀, and an additional ♂ specimen from Angola: Lepi, 3,500 ft., 390 kilometres from coast (*E. Robins*); there are also a couple of specimens from Nyasaland: Mlanje, 22 April, 1913 (*Dr. S. A. Neave*), and two ♂♂ and one ♀ from Kenya Colony: Embu, 18 December, 1913 (*R. J. Stordy*).

Length of body 8-9 mm.; length of wing 11-12 mm.; wing-expanse 24-28 mm.

Head and eyes in both sexes as in two preceding species; occiput above with short but numerous, bright fulvous hairs, which below are replaced by blackish hairs in ♂, and white hairs, like head, in ♀. Frontal triangle of ♂ deep black, and clothed with long, erect, black hair; face more produced than in preceding species, with more abundant and longer mystax, which is black in ♂ and whitish in ♀. Antennae with first joint clothed with numerous, long black hairs in ♂ and with shorter and paler hairs in ♀; third joint very long, linear in ♂, distinctly gibbous above in ♀. Proboscis black, curved, very long (7-9 mm.); palpi black and black pilose. Thorax and scutellum deep black, dark grey dusted on pleurae; in ♂ all hair on back and pleurae is black; in ♀ there is a golden tomentum, like that on frons and upper part of occiput; hair sparse and dark, that on pleurae being white even in case of metapleural tuft; all bristles black in both sexes. Squamae blackish and black fringed in ♂, brownish-yellow and white-fringed in ♀. Halteres in both sexes black, stalks more or less yellowish below. Abdomen black; in ♂ clothed with black hair on basal half, with a few white hairs on sides of first segment; in apical half it shows argenteous tomentum, which begins on hind border of second segment, and is clothed with white hair; ♂ genitalia black and black-haired; venter with black hairs, and with a few white ones on sides and at tip. In ♀ first segment of abdomen is entirely clothed with long erect white hair, remaining segments showing spots of white

tomentum on sides and in middle, and having dark or pale hair and distinct black bristles on hind borders; venter with white and black hair at tip; genitalia with black lamellae, and between them a dense tuft of golden hair. Legs entirely black and longer than in other species, first joint of front tarsi being as long as tibia; femora long and thin, slightly grey tomentose, with long dark hair below, only those of hind pair being armed with five strong black bristles; coxae in ♂ with black, those of ♀ with white hair like femora; claws black; pulvilli dark grey. Wings even longer than in other species, faintly infuscated over entire surface, more intensely so at base and along fore border; alula infuscated, with a dark fringe. Veins dark, with typical disposition; discoidal cell very acute at end, its terminal cross-vein being much shorter than middle one; first posterior cell and anal cell much narrowed at end.

72. *Dischistus farinosus*, sp. nov.

A species of smaller size, differing from the others of the present group owing to the very much paler coloration of the fourrure in the ♂.

Type ♂ from W. Africa: Gambia, 12 October, 1902 (the late Dr. H. E. Dutton and Dr. J. L. Todd).

♂♀. Length of body 6 mm.; length of wing 7 mm.

♂. Head and eyes as in *D. gemmeus*; occiput densely grey dusted, above in middle with short, pale yellowish hair, and below with very short white hair; ocellar tubercle black and black-haired; frontal triangle very narrow, depressed, white dusted and bare; face very narrow, shining black, bare in middle, white dusted on cheeks, with rather long white hair forming a scanty mystax; chin grey dusted, with a white beard. Antennae black; first joint short, with short pale hair; third joint linear, twice as long as first two joints together. Proboscis curved, black, 3.5 mm. long. Thorax and scutellum black, somewhat shining, with some pale yellowish tomentum, and with erect, pale yellowish hair of uniform length; pleurae grey dusted, with white tufts on meso- and metapleurae; only notopleural bristles strong and black. Squamae yellowish, with short white fringes; halteres yellowish, in part black beneath. Abdomen ovate conical black; first segment with erect white hair and argenteous tomentum on hind border; from hind border of second segment to tip, all segments densely clothed with argenteous tomentum, with white hair, longer and denser on sides, but no bristles on hind borders; genitalia black; venter black, white tomentose and white-haired, with narrow transverse black band on the fourth segment. Legs black, coxae and front and middle femora with long white hair beneath; femora white dusted on basal half, those of hind legs bearing four strong black spines below; first joint of front tarsi shorter than tibia; claws black; pulvilli dark, as long as claws. Wings greyish hyaline, anterior basal

half with a faint brownish tinge; alula greyish hyaline, pale fringed. Venation typical for group.

♀. I refer with doubt to the present species, a denuded and damaged specimen from Kenya Colony (*Dr. S. L. Hinde*). Size and general shape as in ♂; frons shining black, one-fifth as broad as head, with yellowish tomentum and erect black hair. Halteres with whitish knobs. Legs with tibiae and first tarsal joints somewhat yellowish. Wings entirely hyaline, discoidal cell exceedingly acute at end, its terminal cross-vein being reduced to a point; second posterior cell triangular.

Group 5. *D. minimus*.

This group, which is chiefly Palaearctic, is also represented in the north and centre of the Ethiopian Region; I have seen only a few specimens from the south. The species are readily recognisable by means of the strongly developed mystax; the long and partly black occipital hair; the united eyes of the ♂; and the short, stout legs, which are in part yellow and have spinose hind femora and black tibiae, the latter bearing spicules. The wings are of the usual length, with a rather short discoidal cell, which has the middle cross-vein generally situate near the middle or before it; the upper branch of the third longitudinal vein is not bent at the base.

The species seen by me may be distinguished as follows:—

- 1 (2). Wings deeply infuscated at base and on fore border; third antennal joint with a node-like protuberance above, beyond middle; legs with entirely black femora, and very dark, mainly black hind tibiae; abdominal fourrure mainly black. *gibbicornis*, sp. nov.
- 2 (1). Wings not infuscated, or pale yellowish at base; third antennal joint linear.
- 3 (6). Abdominal fourrure entirely or mainly black; femora entirely black, or only very narrowly yellow at tips; hind borders of abdominal segments with black bristles.
- 4 (5). Abdomen partly yellowish-haired (eastern species).
vitripennis, Loew.
- 5 (4). Abdomen entirely black-haired (southern species). *coracinus*, Loew.
- 6 (3). Abdomen entirely clothed with yellowish fourrure; femora broadly yellow at tips; wings yellowish at base.
- 7 (10). Frons without silvery spots in front; hind borders of abdominal segments without distinct black bristles.
- 8 (9). Pleurae dark-haired (western species). *sencgalensis*, Macq.
- 9 (8). Pleurae yellowish-haired (southern species). *pectoralis*, Loew.
- 10 (7). Frons with a silvery spot on each side near base of antennae; abdomen with numerous strong black bristles on hind borders of segments. *diadematus*, Bezzi.

73. *Dischistus gibbicornis*, sp. nov.

This species, which is the darkest of the group, and thus forms a connecting link with the preceding section, is distinguished by its gibbous antennae, dark legs and intensely infuscated wings.

The ♂ (a specimen from Kenya Colony) is described by me

in my work on the Bombyliidae collected by the Alluaud-Jeannel Expedition. The British Museum possesses a series of ♂♂ from Kenya Colony: Kisumu Province, Kenyamkago; and Oyanyi River, Kenyamkago, S. Kavirondo, May-June 1911, 3,700 ft. (*Dr. J. Pugh*).

74. *Dischistus senegalensis*, Macquart (1840).

An entirely fulvous-haired species, with pale legs and hyaline wings, which are only slightly yellowish at the base.

Length of body 5.5-6 mm.; wing-expanse 15-17 mm. Described in the male sex by Macquart from Senegal, and placed in the section with closed first posterior cell, but recorded under *Bombylius* in the Catalogues; in the description, however, the author says: "*première cellule postérieure ouverte*." *D. pectoralis*, Loew, from South Africa, seems to be closely allied. In the British Museum there are some ♂ specimens from Sierra Leone (*J. Foxcroft*), and N. Nigeria, 1905 (*Dr. J. M. Dalziel*); also some further specimens from Ashanti, Kumasi, 24 October, 1907 (*Dr. W. M. Graham*); S. Nigeria, Agege, 19 August, 1913 (*Dr. W. A. Lamborn*); N. Nigeria, Zungeru, 5 May, 1911 (*Dr. J. W. Scott Macfie*); and Northern Territories, Gold Coast, 21 May, 1913 (*Dr. J. J. Simpson*). Thus the species seems to be exclusively western.

Head black; occiput flat, concave, with rather long fulvous hair, and with a row of black hairs on border of eyes; ocellar tubercle black-haired. Eyes large, with upper facets distinctly enlarged; eyes united for a space as long as frontal triangle, which is depressed, yellowish dusted and black pilose above; face grey dusted, with dense pale yellowish mystax, which is surrounded by numerous longer black hairs. Antennae black; first joint short and black-haired; third joint linear, sometimes a little swollen above beyond middle, obtuse at tip. Proboscis black, 3 mm. long; palpi black and black-haired; beard blackish. Thorax and scutellum deep black, clothed with rather long fulvous hair, which shows whitish glints when viewed from in front; below this hair there is sparse yellowish tomentum, but distinct bristles are wanting; pleurae dark-haired. Squamae light brownish, with yellowish fringes; halteres yellow, with white knobs. Abdomen deep black, yellowish tomentose and clothed with fulvous hair like that on thorax, with some black hair only on sides at base; no distinct bristles on hind borders of segments; venter dark-haired. Legs pale yellowish; anterior femora on basal half, and posterior ones almost entirely, black and black-haired beneath; hind femora with 5 spines; tibiae with black spicules; tarsi black at tips, with black claws and long, greyish pulvilli. Wings hyaline, vitreous, pale yellowish at base; veins yellow, darkened at tips; costa yellow tomentose at base; alula greyish, with yellowish fringe; venation as in *D. minimus*; middle cross-vein situate a little before middle of discoidal cell.

75. *Dischistus diadematus*, Bezzi (1912).

Closely allied to the preceding species, but readily distinguishable by the silvery spots on the frons, the denser golden yellow pubescence on the body, and the strong black bristles on the hind borders of the abdominal segments.

Described by me in the female sex from N. Nigeria: the British Museum possesses a ♀ from the same country, Zungeru, 5 May, 1911 (*Dr. J. W. Scott Macfie*); and two ♀♀ from the Gold Coast, Aburi, 1912-13 (*W. H. Patterson*). Owing to the fact that this ♀ was taken at the same place and time as a ♂ of *D. senegalensis*, Macq., and that only the ♂ of this latter species is known, while of my species we only know the ♀, I am inclined to think that my species is possibly the other sex of that of Macquart.

The British Museum also has a badly preserved ♀ specimen from Nyasaland Protectorate (*Dr. S. K. Norris*), which may be referred to the present or to a very closely allied species. It is of above the average size, more whitish than yellowish tomentose, with the middle cross-vein situated much before the middle of the discoidal cell; the pubescence near the base of the abdomen is white, not yellowish.

Genus 7. *ADELIDEA*, Macquart (1840).

The present genus may be considered as a form of *Dischistus* with three submarginal cells, just as *Triplasius* is a form of *Bombylius* with the same peculiarity; but *Adelidea* differs from the first three groups of *Dischistus*, here distinguished for South African forms, in the simultaneous presence of the following characters: bare metapleura; middle cross-vein situated beyond the middle of the discoidal cell; and spinose hind femora. Thus it may be regarded as a distinct genus, which is also characteristic of the South African fauna, and is at present monotypic. In my work on the Bombyliidae of the Capetown Museum I have described the very remarkable *Sosiomyia comata*, which closely resembles the genotype of *Adelidea*, but differs in some very important characters.

76. *Adelidea anomala*, Wiedemann (1821).

A species differing from all the *Dischistus* species of the first three sections in its venation and peculiar wing pattern.

Only known from South Africa; there is in the British Museum a single ♂ specimen from the Cape of Good Hope, from the old W. W. Saunders collection. It is very curious that in the South African Museum collection I did not find the present species, but only the closely similar *Sosiomyia*.

The identity of Macquart's *A. fuscipennis* with the present species is beyond doubt; and according to Schiner, *Reise Novara*,

p. 128, *Cyllenia longirostris*, Wied. and Macq., is also to be regarded as synonymous.

To Loew's re-description I have to add: The ♀ is as yet unknown. In the ♂, the eyes have the upper facets not distinctly larger than the lower ones, and at the narrowest point the eyes themselves are separated by a space a little less than the distance between the two basal ocelli. The palpi are black, thin, and very sparsely clothed with short hair; the proboscis is entirely black, 4 mm. long, rather stout and straight. The pubescence on the pleurae is almost confined to the middle, the metapleura being bare. The scutellum is black. The squamae are yellowish, with pale fringes; the plumula is indistinct. The bristles on thorax and scutellum are long and very numerous, being all of a dark yellowish colour; those on the scutellum are disposed in two or three rows. All the femora are spinose beneath, the front pair bearing two, the middle pair four, and the hind pair seven spines; the spicules on the tibiae are very long, even in the case of the front legs; first joint of front tarsi only half as long as the tibia; claws black with yellow bases; pulvilli dirty whitish. Wings with an indistinct basal comb of very short black bristles; alula rounded, but rather short, with only a few scattered hairs on the border; axillary lobe narrow. Veins yellow, the first, third and sixth throughout their whole length, the others darkened on the apical half; marginal cell very broad at the end; upper branch of the third vein strongly bent at the base; discoidal cell narrow and long, three and a half times as long as broad, rectangular at the end, with the apical cross-vein longer than the middle cross-vein; second posterior cell trapezoidal; anal cell broadly open.

Subfamily II. USIINAE.

Genus 8. **ISOCNEMUS**, gen. nov.

I have to erect this new genus here for a rather aberrant species, which was originally placed in the genus *Bombylius*, with which it agrees in having the first posterior cell closed. But the absence of rows of spicules on the tibiae evidently shows that the genus belongs to a different subfamily, which in my classification can only be the Usiinae. The undeveloped occiput, and the flattened body with a striking abdominal pattern, give to the new genus a very peculiar appearance. The generic characters may be deduced from the following description of the genotype.

77. **Isocnemus nemestrinus**, sp. nov.

An anomalous species looking like a *Nemestrinus* in regard to its general facies and coloration.

Type ♂, a single specimen from Abyssinia, Gambogi, Arussi Country, 14 October, 1908 (*Dr. R. E. Drake-Brockman*).

♂. Length of body 9.5 mm.; wing-expanse 21 mm.

Head black, occupied almost entirely by eyes which are very large and bare, and in contact for a distance longer than frontal triangle; hind borders of eyes absolutely entire, facets of part above line of base of antennae distinctly larger than those of lower part. Occiput entirely flat, not at all prominent above or on sides, with short, yellowish-grey hair, which is more abundant and longer below; vertical triangle very small, with dark hair; frontal triangle longer and broader than vertical one, but of comparatively small size, shining black, with a narrow whitish line on sides, almost bare in middle, with some yellowish hairs on sides. Face very short, mouth opening being produced nearly to base of antennae; face clothed, like rather prominent peristoma, with short, yellowish-grey hair, which forms a kind of comb on each side, extending to lower corner of eyes. Antennae distinctly, though narrowly separated at base; first joint long, not thickened, black, with short dark hairs above and longer yellowish ones beneath; second joint black and short; third joint very narrow, linear, a little longer than first two joints together, of a bright reddish-yellow colour, ending in a short and thin, blackish style. Proboscis entirely black, thin, directed upwards, 7 mm. long; palpi rather long and thin, with long pale hair below at base. Thorax flattened, shining black, clothed with not very dense yellowish-grey hairs of uniform length, without any black ones, and with no distinct bristles on sides; mesopleural hairs longer than rest; metapleura bare, but concealed; humeral and postalar calli dark reddish-brown, like scutellum, which is shining, lighter reddish-brown, narrowly black at base, clothed with very sparse hairs like those on thorax, almost bare on disc, and without distinct bristles along hind border. Squamae dirty whitish, with long pale fringes; halteres with brownish-yellow knobs. Abdomen flat, oval, but distinctly attenuated at end, clothed with sparse but rather long and entirely yellowish-grey hairs, which are denser along hind borders and on sides of segments; bristles completely wanting; abdomen entirely shining, first segment wholly black, second red with a broad black fore border, which is dilated in middle into a rounded spot which nearly reaches hind border; third, fourth and fifth segments likewise red, with anterior border in each case narrowly black, and dilated in middle to form a broad, subquadrate spot not reaching hind border; sixth and seventh segments very small, ring-shaped, entirely black; genitalia brown, with black lamellae. Abdomen therefore appears red, with black base, narrow black basal bands on segments and a broad median stripe formed by a series of separate black spots; sides of abdomen also show black borders, extending from base to tip. Venter entirely yellowish, with scattered, whitish hairs, and with transverse bands of short, dense yellowish hairs on hind borders of segments; even fifth segment is laterally compressed, and thus venter appears

pointed at end. Legs rather short and stout, entirely red, with black coxae, and with front and middle femora darkened at base; legs clothed with pale hairs, without distinct spines on hind femora, even tibiae only with dense blackish hairs, not disposed in rows, in place of usual series of spicules; tarsi rather short and stout, claws black, red at base, and provided with a short but stout basal tooth; pulvilli entirely wanting. Wings narrow and proportionally very short (each wing measuring only 8 mm. in length), entirely hyaline, being only a little yellowish at extreme base. Basal comb very small, scarcely distinguishable; veins reddish-yellow, darkened distally; second longitudinal vein straight, gently rounded at end, marginal cell rather narrow; upper branch of third vein widely divergent from main stern at base, then gently rounded; middle cross-vein long, placed beyond middle of discoidal cell, which is rather short and narrow, and somewhat acute at end, vein dividing it from second basal cell being only one-third as long as middle cross-vein; first posterior cell as long as discoidal cell, pointed outwardly and shortly stalked; second and third posterior cells broad and short, third smaller than second; anal cell broadly open. Alula dark grey, well developed, but without usual fringe.

Genus 9. **CORSOMYZA**, Wiedemann (1820).

Of this rather aberrant genus, which is characteristically South African, I have before me a large number of specimens, including representatives of all the known species and many others new to science.

Without any doubt *Lasioprosopa bigotii* of Macquart (1855), stated by some error to be from Australia, is identical with *Corsomyza nigripes*, Wied.; this synonymy was pointed out long ago by Schiner (*Reise Novara*, Diptera, p. 113, note 2), but has been overlooked by all subsequent authors. In the South African Museum there is a specimen of *Corsomyza nigripes* labelled *Lasioprosopa bigotii* by M. Bigot himself. The extremely misleading description of the antenna of *Lasioprosopa* given by Macquart, and repeated by Becker, is readily intelligible if one realises that Macquart mistook the cylindrical basal portion of the third antennal joint for the second joint, and the broadened apical portion for the third joint; the base of the antennae is always concealed within the dense facial brush.

I have distinguished the genus *Callynthrophora* of Schiner (1867) on account of the shape of the head, rather than the presence of three submarginal cells; this last character is not generic, as is seen in *Triplasius*; moreover, in the specimen of *Corsomyza anceps* here described there are three submarginal cells, in one wing, and two in the other. The form of the exceedingly broad head, and of the very elongate frons, are the true characters of the genus *Callynthrophora*; the peculiar length

of the frons is due to the fact that the antennae are inserted much lower, and are thus placed in the centre of the facial brush, not on its upper border as in *Corsomyza*. The two genera *Megapalpus* (*Dasypalpus*) and *Hyperusia* are separated on account of their very different heads, and bodies largely devoid of hair; in addition the former is characterised by its open anal cell.

The nearest ally of *Corsomyza* seems to be the North American genus *Pantarbes*, Osten Sacken,* which on the one side is allied to *Anastoechus* and on the other to *Mulio-Cytharea*, as already stated by the author. In *Pantarbes*, however, the antennae are wide apart from each other, the metapleural tuft is developed, the legs are spinose and the first posterior cell is closed and stalked. In *P. capito*, O.S., the form of the third antennal joint is very like that seen in certain species of *Corsomyza*.

The most striking character of the genus *Corsomyza* (as also of *Callynthrophora*) is to be seen in the circular brush of hair, which covers the anterior part of the frons and the whole of the face; it consists of very dense, short, straight hair of uniform length, and is surrounded by a ring of stiffer and often differently coloured hairs. In the upper part of this circular facial brush, and quite close to its upper border, are placed the long antennae, the hair at the base of which is often different in colour from that belonging to the brush itself, forming very striking tufts; near the lower border of the brush is placed the rather short, stout, horizontal proboscis, with the long, thin palpi. This brush is equally well developed in both sexes (in the female of *Callynthrophora* it is less distinct) and is often found to be choked with pollen; it is therefore probable that we have here a peculiar adaptation for the impollination of particular flowers visited by these insects. I have never seen a statement on this point, but I think that these flies, like our species of *Usia*, visit composite flowers.

In further characterisation of the genus *Corsomyza*, the following points are to be noted :—

Eyes of ♂ divided into two distinct parts by a sharp line of separation; the upper part, which includes more than half, has much larger facets than the lower; this division is more pronounced in the species of larger size, and is less evident only in *C. clavicornis* and *C. bicolor*. Occipital border bare near eyes. Body entirely devoid of distinct bristles, even on sides of thorax, hind border of scutellum and hind borders of abdominal segments. Metapleura bare, but often concealed below the mesopleural and pteropleural tufts. Squamae with long fringes; plumula well developed. Legs stout, with femora devoid of spines, and with very short

* In all probability the South American genus *Scricosoma*, Macquart, is also closely related to *Corsomyza*. *Scricosoma* itself is unknown to me, but was placed here by the late Mr. Verrall, who was likely to have had knowledge of the affinities between *Corsomyza* and *Pantarbes*.

hairs; tibiae devoid of rows of spicules. Wings without a basal comb; alula wanting; auxiliary vein, closely approximate to the first longitudinal throughout its whole length; second vein only gently curved at end, the marginal cell being therefore of but moderate breadth at the tip; upper branch of third vein originating at right angles, and after a short space suddenly curved; discoidal cell short and of polygonal shape, broadly obtuse outwardly and even at base, not produced into second basal cell; principal branch of third vein strongly bent towards hind border beyond middle cross-vein, thus first posterior cell is not in direction of longitudinal axis of wing, but directed towards hind border; anal cell usually closed and shortly stalked; axillary lobe narrow; ambient vein complete.

The following is a table of all the species with which I am acquainted, and at the same time of all the species at present known:—

- 1 (16). Third antennal joint black; anal cell closed and usually provided with a short stalk.
- 2 (3). First antennal joint elongate, about half so long as third joint, and clothed with yellow hairs; third joint broad at base; face yellow, with circular brush not margined with black; tibiae and tarsi reddish; wings yellowish towards base on anterior half. *simplex*, Wied.
- 3 (2). First antennal joint not elongate, and always shorter than half of third.
- 4 (5). Hind tibiae conspicuously feathered with very long and dense black hairs; face yellow, with circular brush not margined with black; first antennal joint pale-haired, third joint with broad base. *pennipes*, Wied.
- 5 (4). Hind tibiae never densely feathered, even if sometimes thinly ciliated.
- 6 (15). Facial brush formed by whitish or pale yellowish hairs, only below or at sides with black hairs.
- 7 (10). First antennal joint clothed with black hairs, forming a conspicuous black tuft within the facial brush; this last surrounded with black hairs; third antennal joint narrow at base, but less dilated at tip, and not abruptly widened; legs entirely black.
- 8 (9). Face yellow, abdominal fourrure bright rufous; larger species. *nugripes*, Wied.
- 9 (8). Face black, in ♀ with a yellow spot on each side; abdominal fourrure pale yellowish; smaller species. *bipustulata*, sp. nov.
- 10 (7). First antennal joint with yellowish or whitish hairs; third antennal joint filiform at base, suddenly and exceedingly dilated at end, at least in ♂.
- 11 (14). Abdomen as broad as, or only a little narrower than thorax and less distinctly conical in shape; halteres with white knobs; only two submarginal cells.
- 12 (13). Tibiae and tarsi red; chin with a dense tuft of black hairs; femora dark pilose; larger species. *hirtipes*, Macq.
- 13 (12). Tibiae and tarsi black; chin devoid of a tuft of black hairs; femora white pilose beneath; division in eyes of ♂ less distinct than usual. *clavicornis*, Wied.
- 14 (11). Abdomen quite conical, half as broad as thorax; knobs of halteres dark; tibiae and tarsi dark brownish colour; three submarginal cells sometimes present. *anceps*, sp. nov.
- 15 (6). Facial brush formed entirely of black hairs, yellow tuft at base of antennae very conspicuous; tibiae and tarsi black; third antennal joint broadly clavate, with slender base. *bicolor*, Bezzi.

- 16 (1). Third antennal joint entirely reddish; anal cell narrowly open on margin of wing; tibiae and tarsi yellow. *ruficornis*, Bezzi.

78. *Corsomyza nigripes*, Wiedemann (1820).

A bright fulvous species of rather large size (for the present genus), readily recognisable by its entirely black legs, and by the black-haired basal joints of the antennae. Of this by no means rare species the British Museum possesses three ♂♂, including one from the Cape of Good Hope, purchased from Francis Walker; another from the same locality presented by the Rev. A. E. Eaton, and the third from Cape Town, January, 1891 (ex coll. W. L. Distant).

79. *Corsomyza bipustulata*, sp. nov.

Closely allied to the preceding species, and perhaps only a variety of it, *C. bipustulata* is characterised by its smaller size, the pale yellowish fourrure on the body, and the differently coloured face in both sexes.

Type ♂, type ♀, and two additional specimens from Simon's Town, September, 1894 (the late *P. de la Garde*, *R.N.*).

♂♀. Length of body 5-6 mm.; length of wing 5-6 mm.

Head, its pubescence, facial brush and appendages exactly as in *C. nigripes*; but face of ♂ entirely shining black, while that of ♀ has two broad yellow oval spots, one on each side, corresponding to the two patches of hairs forming facial brush. Thorax with pale yellowish hair, that on fore border in ♂ with a whitish gleam when viewed from in front; pleurae in ♂ with yellowish hairs above and black ones beneath and on pectus, and in ♀ with yellowish hairs above and white hairs below and on breast. Halteres in ♂ with knobs brownish above. Abdomen as in *C. nigripes*, but long hairs in ♂ pale yellowish on back and mainly blackish on venter; in ♀ corresponding hairs very short and sparse, tergites being almost bare in middle. Legs and wings as in *nigripes*.

80. *Corsomyza anceps*, sp. nov.

A smallish species, with very narrow conical abdomen, dark reddish tibiae and tarsi, and sometimes with three submarginal cells in wings.

Type ♂, a single specimen from Cape Colony, Knysna (*R. Trimen*). The present species is somewhat anomalous, because the single specimen available for examination shows three submarginal cells in the left wing, while in the right there are only two cells as usual; this anomaly seems to indicate the unsoundness of the main character upon which the genus *Callynthrophora* was founded. But, as I have already stated, the true characters of the latter genus are to be found in the head and antennae; and in respect of these details the species under consideration is a typical *Corsomyza*.

♂. Length of body 5 mm.; wing-expanse 12 mm.

Head very broad and transverse, body being in front at least four times as broad as at tip of abdomen; head entirely shining black, even on face, but shaped as in *C. nigripes* and with similar fourrure; division between upper and lower facets of eyes very striking, smaller facets occupying only lower third. Antennae entirely black, third joint clavate at tip, but only to about same extent as in *C. nigripes*. Facial brush surrounded by black hairs; black hairs on under side of first antennal joints form a black tuft within brush. Proboscis and palpi black, latter with black hairs. Thorax and scutellum black, clothed with long fulvous hair; pleurae with fulvous hair above, and with dark hair below and on breast. Halteres dark reddish-yellow; squamae brownish, with yellow fringes. Abdomen very narrowly conical, deep black, with long but not dense bright fulvous hair, which is shorter and in part black on venter. Femora black with yellow tips, clothed below with long dark hairs, like that on coxae; tibiae and tarsi very dark reddish-brown colour; hind tibiae ciliate on outer surface, cilia scattered and decreasing in length from base to tip; claws black with yellow bases; pulvilli yellowish. Wings hyaline, slightly yellowish at base and along costal cells. Venation as in *C. nigripes*, but anal cell with a much shorter stalk.

Genus 10. **HYPERUSIA**, gen. nov.

I have to erect this new genus for a single female specimen, which in general facies and in venation is very like *Corsomyza*, but differs owing to the body being almost bare, the absence of the facial brush, and the very different form and mode of insertion of the antennae. From the allied genus *Megapalpus*, Macquart (= *Dasypalpus*, Macquart), with which it agrees in the bareness of body and in the want of a facial brush, it is distinguished by the short, thick palpi, by the different shape and carriage of the antennae, and by the stalked anal cell. Like *Megapalpus*, the new genus recalls the Mediterranean species of *Usia* (whence the name), but it differs therefrom in the shape of head and in the presence of four posterior cells.

The essential characters of the new genus are as follows:—

Head very broad and transverse, broader than thorax, rather flat, and viewed from in front much broader than high; occiput flat, excavated in middle, without fringe of hair on the orbital margins and devoid of an erect crest on vertex. Ocelli large, situate on a very flat triangle or low tubercle. Eyes bare, with facets of equal size. Frons very broad, flat, not at all prominent, with sides almost parallel or very slightly divergent anteriorly; frons displaying a broad, but slightly marked, median longitudinal furrow, crossed in centre by a broad transverse furrow; frons passing gradually into cheeks and face; latter very short,

and produced into a somewhat prominent border on margin of buccal cavity; jowls and peristoma proportionally narrow. Antennae inserted in middle of head as seen in profile, very near margin of buccal cavity, and rather close together at base; first joint very short, but twice as long as globular second joint; third joint two and a half times as long as first two joints together, not narrowed at base and not clavate at tip, of an elongate ovate-linear shape, obtuse at end, and devoid of terminal style. Buccal cavity rather broad and short; proboscis short, distinctly pubescent at tip, very broad and thick at base, almost tetragonal; palpi proportionally short and thick, pilose. Thorax broad and short, tolerably convex; pleurae bare, without metapleural tufts; no distinct bristles on sides or behind. Scutellum rather small, semicircular, convex, without bristles on hind border. Squamae with almost bare margins; plumula not distinct; halteres large. Abdomen in middle as broad as thorax, tapering quickly to a point behind, without bristles on hind borders of segments. Legs short and stout, almost bare and without bristles or spicules; tarsi shorter than or as long as tibiae; pulvilli well developed, as long as claws. Wings exactly as in *Corsomyza nigripes*, but distinctly broader and with axillary lobe, like alula, more developed; venation as in above-named species, only upper branch of cubital fork a little more sinuous.

Genotype: the following new species.

81. *Hyperusia luteifacies*, sp. nov.

A stoutly built fly, strongly recalling a ♀ *Corsomyza*, but at once distinguished by the almost bare head and by the very different shape and carriage of the antennae.

Type ♀, a single specimen from Port Shepstone, Natal, May, 1897 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*).

♀. Length of body 9 mm.; length of wing 8.2 mm.

Head shining black, with yellow markings as follows: a small transverse spot on occiput below vertex, anterior half of frons and whole of face and cheeks likewise yellow. Hair on occiput sparse, short and pale yellowish, like that on vertex and ocellar triangle; on frons short hairs are dark on black part and pale on yellow part, limit between colours forming a triangle, vertex of which is extended almost to anterior ocellus; face with short white hair near border of buccal cavity; beard very short, and of a dark colour. First and second joints of antennae yellow, former with short white hairs; third joint entirely black. Proboscis and palpi black, former 3 mm. long. Thorax shining black, with humeral and postalar calli, and pleural sutures brownish-red; on back it is clothed with short and sparse whitish-grey pubescence, which becomes a little longer and denser on sides; pleurae have only a thick tuft of whitish hairs on mesopleura. Scutellum shining black, almost bare, with a pair of transversely elongate ochraceous-rufous spots, practically

fused together in middle line. Halteres yellow, with paler knobs; squamae pure white. Abdomen shining black, finely punctulate, with short, sparse, whitish pubescence, more developed at base and on sides. Venter black, grey tomentose. Femora black, with yellow tips and very sparse, short, dark grey hairs, tibiae and tarsi reddish-yellow, almost bare, only hind tibiae somewhat pubescent; last tarsal joint black; claws red with



FIG. 7.—*Hyperusia luteifacies*, sp. nov. Head of ♀ in profile. $\times 16$.

black tips; pulvilli dirty yellowish. Wings whitish hyaline, faintly yellowish at base and on fore borders; all veins entirely bright yellow.

NOTE.—In the South African Museum there is a second species (*H. minor*) of the present genus, differing in being much smaller, and in the anal cell being open; the antennae have the basal joints black, while the third joint is yellow; and a third species (*H. soror*), which is equally small, but has a closed anal cell, an entirely yellow third antennal joint, and darker legs.

Subfamily III. PHTHIRIINAE.

Genus 11. GONARTHURUS, gen. nov.

It is necessary to erect this new genus here for a group of Ethiopian species (placed at present in *Dischistus*), which have a peculiar facies and are distinguished by a number of important characters. Even after the separation of these forms, the genus *Dischistus* still remains an aggregate of disparate elements, which may be divided into groups like those of *Bombylius*; but the species here removed to form the new genus show characters of greater value.

As the genotype of *Gonarthrus*, *Dischistus cylindricus*, described by me from Erythraea, in 1906, may be designated; in its description are to be found some of the essential characters, which may be indicated as follows. Body narrow, elongate

and cylindrical, clothed with very long, pale fourrures, and devoid of macrochaetae or only with some bristly hairs on the abdomen. Eyes bare, not sinuous behind; in the ♂ they are in contact for some distance, and have the upper facets enlarged; frons in the ♀ comparatively narrow; ocelli distinct, disposed in an equilateral triangle, but placed on a tubercle of little elevation. Occipital border with a crown of very long hairs. Antennae very long, approximate at base, with the first joint a little swollen, three to four times as long as the second; third joint linear, so long as or a little longer than the first two joints together, with a very thin and but little developed terminal style. Face clothed with dense hair, which forms a soft mystax. Proboscis rather short and stout, not longer than the thorax and head together, often very short. Palpi two-jointed, the basal joint very long and swollen in the middle, the apical joint shorter and directed outwards, thus forming a right angle (whence the generic name) with the basal joint, and bearing some hairs at the end. Pleurae sparsely clothed with hair, metapleura bare. Squamae narrow, folded in the middle, with long fringes. Abdomen elongate, conical, much longer but not broader than the thorax; ♂ genitalia small, those of the ♀ devoid of a tuft, but with a broad lower lamella and widely opened. Legs stout; all the tibiae with well-developed spicules, though on the front pair the latter are sometimes very minute; middle and hind femora with strong spines beneath; in all the known species the middle tibiae have the inner terminal spur yellow, with a black tip; pulvilli as long as the claws. Wings very short, destitute of basal hook or basal comb, and almost devoid of an alula, which is reduced to a narrow strip and is without a fringe. Second longitudinal vein straight, gently curved at the end, the marginal cell therefore not broadened distally; cubital fork broad, its upper branch moderately divergent from the main stem at the base, almost parallel with the hind border of the wing; first posterior cell broadly open; middle cross-vein placed beyond the middle or even on the distal third of the discoidal cell, which is short, and rather acute at the end, its terminal cross-vein being always shorter than the middle one; second and third posterior cells of almost equal size, the fourth twice as long as broad, its basal cross-vein being so long as or a little shorter than the basal cross-vein of the discoidal cell; anal cell open, but narrowed at the end; axillary lobe well developed; ambient vein complete.

The genus *Gonarthrus* occupies an intermediate position between the *Bombyliinae* and the *Phthiriinae*, showing the broad cubital fork of the former, but having the main characters of the latter. Two-jointed maxillary palpi are rare in the family, being present only in the genera *Crocidium*, *Oligodranes*, *Apatomyza* and *Semiramis*. The new genus shows greatest affinity to *Crocidium*, in which the palpi are very similar; *Crocidium*, however, has a narrow cubital fork and a closed anal cell, being

a true Phthiriine, but exhibiting a somewhat Bombyline character in the hairy face.

The genus *Gonarthrus* seems to be distributed throughout the entire Ethiopian Region, the more striking forms occurring in the South. The species known to me can be distinguished as follows:—

- 1 (6). Proboscis thin, with rather small terminal labella, so long as or even longer than thorax and head together; first antennal joint with short black hair above, at least in ♂.
- 2 (5). Abdomen with black bristles on hind borders of segments; fourrure on body pale yellowish; halteres of ♂ with white or yellowish knobs.
- 3 (4). Thorax and face without black hair; antennae at base with pale hairs beneath. *cylindricus*, Bezzi.
- 4 (3). Thorax and face with black hairs intermingled; antennae with entirely black hairs. *hirtus*, Bezzi.
- 5 (2). Abdomen without black bristles, entirely clothed, like rest of body, with long white hairs; halteres of ♂ with black knobs. *chioneus*, Bezzi.
- 6 (1). Proboscis thick, shorter than thorax, with broad labella.
- 7 (8). Body with exceedingly long white hair, and devoid of black abdominal bristles in ♀; halteres of ♂ with black knobs; tibiae often yellow; first antennal joint in both sexes with white hairs above. *cycnus*, Bigot.
- 8 (7). Hair moderately long, pale yellow or even bright yellow; halteres of ♂ with white knobs; tibiae black; abdomen of ♀ with distinct black bristles.
- 9 (10). Larger species, at least 10 mm. long; fourrure on body pale yellow; ocellar tuft black in both sexes, ♀ with many black hairs on vertex; antennae with a narrow, acute third joint, first joint in ♂ with black hairs above. *leucophys*, Bigot.
- 10 (9). Smaller species, not exceeding 8 mm. in length; fourrure bright yellow; ocellar tuft yellow in both sexes, vertex in ♀ with yellow hairs; antennae with broad and obtuse third joint, first joint yellow-haired in both sexes. *xanthinus*, Bezzi.

82. *Gonarthrus cylindricus*, Bezzi (1906).

Easily recognisable by the yellowish-grey fourrure, long, thin proboscis, and the first joint of the antennae being black-haired on the upper side.

This species, originally described from Erythraea, seems to be widely distributed in Central Africa, but wanting in the extreme south. There are in the collection before me numerous specimens from S. Abyssinia (*R. J. Stordy*); Kenya Colony, Nakuru, January, 1913 (*Dr. B. L. van Someren*); N. Rhodesia, Chilanga, "at wild flower of compositae," 6 May, 1913 (*R. C. Wood*); Nyasaland, Zomba, April, 1906, and Blantyre, 23 April, 1910 (*Dr. J. E. S. Old*); Natal, Willow Grange, Mooi River, 30 March, 1913 (the late *R. C. Wroughton*); N. Rhodesia, Lualaba R., 2,500–4,000 ft., April–May, 1907 (*Dr. S. A. Neave*); besides other examples from Kenya Colony, including one which measures only 4 mm. in length.

The frons of the ♀ is black, and clothed with black hairs on the basal (not apical, as stated in my original description) half,

while on the apical half there is a transverse band of golden pubescence, just above the root of the antennae. *D. hirtus*, ♀, described by me in 1912 from N. Nyasa, is perhaps only a variety of the present species.

83. *Gonarthrus leucophys*, Bigot (1892).

Distinguished from the preceding by the shorter proboscis, yellower fourrure on the body, less abruptly divergent upper branch of the cubital fork, and by the narrower third antennal joint. Described originally from the Cape of Good Hope, there are in the British Museum numerous specimens from Natal, Howick (*J. P. Cregoe*) and Willow Grange (*R. C. Wroughton*), and one ♂ from the Transvaal, Pretoria, 19 March (*Miss J. Brincker*).

The as yet undescribed ♀ is very like the ♂; the frons is narrower than the eye, is clothed with blackish hairs on the basal half, and has a golden band above the antennae; the first antennal joint has yellow hairs on the upper side; the black bristly hairs on the hind borders of the abdominal segments are well developed in both sexes.

84. *Gonarthrus xanthinus*, Bezzi.

Closely allied to the foregoing species, but smaller and clothed with brighter yellow hair, and with yellow hairs on the base of the antennae. Described by me in my memoir on the Bombyliidae of the South African Museum; the British Museum possesses ♀♀ from the Transvaal and the Cape Province, collected respectively by *A. J. Cholmley* and *Miss J. Brincker*.

Genus 12. *GERON*, Meigen (1820).

The following are additional characters of this genus:—

Palpi one-jointed. Eyes in ♂ with upper facets enlarged; in the same sex the eyes are in contact for a long distance in the middle line above, and are anteriorly depressed and produced conically upwards, thus in profile appearing nearly triangular. Body without bristles. Metapleura bare. Femora unarmed, but tibiae provided with distinct spicules. Second longitudinal vein straight to the end. Ambient vein incomplete, ending at the tip of the last longitudinal vein; axillary lobe and alula strongly developed.

It was long ago stated by Loew that in the Mediterranean and Ethiopian Regions but a single very variable species of this genus is present. But with the material now available it is possible to see that there are more than one species, some of which are distinguished by very important characters. The species known to me may be recognised as follows:—

- 1 (18). Face bare in middle, with argenteous hairs only on sides; third antennal joint gradually tapering into a long point.

- 2 (11). Cubital fork short and broad, second submarginal cell almost as broad as long, or only a little longer; anal cell with long stalk; jowls devoid of long hairs; first antennal joint with short hairs; halteres white or yellow.
- 3 (10). Face black, with grey or whitish dust, or even white, flat and clothed with argenteous hairs on sides.
- 4 (9). Face black, with grey or whitish dust; basal joints of antennae black.
- 5 (6). Legs densely clothed with white or even argenteous, shining tomentum, chiefly on femora; basal joints of antennae with whitish hairs; frons in ♀ mainly with whitish hairs; ♂ genitalia very small and hidden. *hybridus*, Meig.
- 6 (5). Legs devoid of white tomentum, or with such tomentum very sparse, even on femora; basal joints of antennae black-haired; frons in ♀ mainly black-haired; ♂ genitalia larger, displayed, with a prominent yellow penis.
- a (b). ♂ genitalia small and hidden; frons in ♀ white-haired; wings suffused with faint fuscous tinge. *umbripennis*, Bezzi.
- b (a). ♂ genitalia larger, displayed with a prominent yellow penis; frons in ♀ mainly black-haired; wings quite hyaline.
- 7 (8). Species of greater size (6 mm.); abdomen with distinct yellowish tomentum; thorax with a broad, grey, longitudinal, median, stripe. *phallophorus*, Bezzi.
- 8 (7). Species of smaller size (4–5 mm.); abdomen without tomentum; thorax destitute of such a stripe. *priapeus*, Bezzi.
- 9 (4). Face white or wax coloured, like jowls; basal joints of antennae dark reddish. *albifacies*, sp. nov.
- 10 (3). Face entirely shining black, produced into a conical prominence, and devoid of argenteous hairs on sides; halteres yellow; second submarginal cell distinctly longer than broad. *nasutus*, sp. nov.
- 11 (2). Cubital fork long and narrow, thus second submarginal cell at tip twice or more as long as broad.
- 12 (17). Antennae entirely black; coxae black; halteres with black knobs (upper surface of knobs at any rate black in ♂); abdomen quite black.
- 13 (16). First antennal joint distinctly thickened, and clothed with long, dense hair; jowls with very long, dense hair.
- 14 (15). Wings hyaline; eyes in ♂ in contact for a long distance; frontal triangle small, triangular, grey dusted. *barbatus*, sp. nov.
- 15 (14). Wings strongly infuscated; eyes in contact for a short distance; frontal triangle broad, deep black. *luctuosus*, Bezzi.
- 16 (13). First antennal joint very thin and not very hairy; jowls not barbate. *leptocerus*, Bezzi.
- 17 (12). Basal joints of antennae, coxae and abdomen yellowish; knobs of halteres entirely yellowish. *dichromus*, Big.
- 18 (1). Face entirely clothed with long dark hair, forming a complete mystax; third antennal joint with basal half ovate, and apical part very thin and styliform; venation as in *hybridus*, but with veins much darker or even blackish. *mystacinus*, sp. nov.*

85. *Geron hybridus*, Meigen (1804).

A widely distributed species, easily recognised by the argenteous hairs on the sides of the grey dusted and not prominent face; by the white-haired first antennal joint; by the very often entirely yellow legs of the ♀, and by the light yellow veins of the wings.

Loew recorded the present species from Caffraria, and showed

* Type ♂ from Syria in the writer's collection; included here only for comparison.

its variability. It is curious to find that all the other described forms from the Mediterranean, or from the Ethiopian Region, prove to be synonyms of the present species: e. g. *G. gibbosus*, Meigen (1820), an arbitrary change of name; *G. halteralis*, Meigen (1820), from Portugal; *G. olivieri*, Macquart (1840) from the Greek Archipelago; and *G. capensis*, Walker (1852), from the Cape. I at first thought that this last mentioned might be identical with the new *G. barbatus*, here described for the first time; but the short description applies better to *G. hybridus*.

The specimens of *G. hybridus* in the British Museum include: a ♂ and two ♀♀ from Mozambique (*F. Muir*, Sharp coll.); a ♀ from S. Nigeria, 1908 (*G. C. Dudgeon*); a ♂ from Arabia, Aden, 5 March, 1895 (*Lt.-Col. C. G. Nurse*); three ♂♂ from S. Abyssinia (*R. J. Sturdy*); and two ♂♂ from Kenya Colony (*same collector*). The species thus seems to occur throughout the entire Region, from North to South, and from West to East Africa.

The closely allied *G. albifacies* is described by me from Assab, in my work on the Bombyliidae of the Budapest Museum; *G. phallophorus* and *G. priapeus*, which are also nearly allied to *G. hybridus*, Mg., were described by me from W. Africa, in my work on the Bombyliidae of the Museum of Genoa.

86. *Geron nasutus*, sp. nov.

A robust species, readily distinguishable from any other on account of the very prominent, shining black face, which is devoid of argenteous hairs on the sides.

Type ♂, a single specimen from Nyasaland, Mt. Mlanje, 10 December, 1912 (*Dr. S. A. Neave*).

♂. Length of body 6.5 mm.; length of wing 5.5 mm.

Head black; occiput dark grey dusted, with argenteous scaly toment on sides below, and with long and dense whitish hairs, situate at some distance from hind margins of eyes. Ocellar tubercle deep black, prominent, with a few black hairs. Eyes of typical shape, in contact along a linear, median depression, which is more than four times as long as ocellar tubercle. Frontal triangle deeply excavated, of same size as ocellar tubercle, shining black, adorned on each side near eyes with a tuft of argenteous scaly hairs, which are continued on to neighbouring part of cheeks, at sides of antennae. Face rather long, shining black, devoid of tomentum, with a conspicuous prominence in shape of an obtuse conical protuberance, which in profile projects like a nose; argenteous hairs on sides quite wanting. Jowls very narrow, linear, pale yellow, bare; chin black, with argenteous scales on sides, and with a long white beard. Antennae entirely black, inserted a little below middle line of eyes; first joint with short white hairs; third joint twice as long as first, deep black, not broader than second at base, and gradually tapering into a proportionally short point. Proboscis black, about 3 mm. long;

palpi black, rather long, with two or three very short dark hairs at tip. Thorax and scutellum black, clothed with rather long, soft, whitish hairs, of uniform length; pleurae dark grey dusted, with white mesopleural hairs. Squamae whitish hyaline, with yellow border and long white fringe; halteres yellow. Abdomen deep black, opaque like thorax, clothed, even on venter, with hair of uniform length; there is besides a distinct tomentum, which is yellowish on back of tergites, and white on sides and beneath; genitalia black, concealed, white pilose. Legs with coxae black, but four posterior tibiae and base of tarsi yellow, front tibiae being dark yellowish at base only; femora and tibiae clothed with white scales; coxae and femora below with long white pubescence; spicules on tibiae black; claws black; pulvilli dark. Wings quite hyaline, with a pale yellowish stigma; veins black on apical half, agreeing in disposition with those of *G. hybridus*, but with longer cubital fork, second submarginal cell being a little longer than broad; middle cross-vein situate on middle of discoidal cell, which is rather narrow.

87. *Geron barbatus*, sp. nov.

Closely allied to preceding species, but at once distinguishable by the grey dusted face being less prominent, by the long hairs on the jowls, and by the very long upper branch of the cubital fork.

Type ♂, a single specimen from Simon's Town, October, 1894 (the late *P. de la Garde*, *R.N.*); in the Museum at Budapest there is a ♀ specimen from the Cape Province (Willowmore).

♂. Length of body 5 mm.; length of wing 5 mm.

Head as in foregoing species, but on ocellar tubercle and on eye margins there are long black hairs, which are wanting in *G. nasutus*; frontal triangle depressed, entirely white dusted, bare; face flat, grey dusted, bare on middle and on sides; jowls distinctly broader, densely white dusted, clothed with very long and numerous, rather strong, white hairs, which are directed forwards, forming a kind of peculiar double mystax on each side of mouth opening; beard white. Occiput devoid of argenteous scales on sides and below. Antennae black; first joint clothed with very long and numerous black hairs; third joint wanting in case of type, but in ♀ shaped as in *G. nasutus*, though even longer and more styliform. Proboscis and palpi black, former 2.5 mm. long. Thorax, scutellum and abdomen as in the foregoing species, but destitute of tomentum; pleurae, sides of abdomen and venter clothed with a dense, light grey dust. Genitalia red, with two lanceolate, black lamellae beneath. Legs as in preceding species, but front tibiae almost entirely yellow; white scales less developed; pulvilli whitish. Wings distinctly longer than in *G. nasutus*, hyaline, with pale yellowish stigma; veins black, with yellowish base. Upper branch of cubital fork very long, second submarginal cell being more than

twice as long as broad; middle cross-vein placed a little beyond middle of discoidal cell, which is rather narrow, as long as second posterior cell, and has its external vein strongly S-shaped; anal cell almost sessile at end.

Subfamily IV. *SYSTROPINAE*.

Genus 13. *SYSTROPUS*, Wiedemann (1820).

This important genus seems to be abundantly represented in the Ethiopian fauna, and this too by peculiar groups of forms. The described species, although not numerous, have been involved in much confusion, and in three previously published papers* I have endeavoured to clear up the forms of the genus, and those belonging to Africa in particular.

The Ethiopian fauna is the only one in which are to be found species of *Systropus* with three submarginal cells. But this character is not so important as it might be believed, as already shown by the genera *Triplasius* and *Callynthrophora*, and by the fact that some South African species of *Systropus*, like *S. crudelis*, have stumps of veins indicating the possibility of division of the first submarginal cell. The question arises, whether the typical species of the genus has two or three of these cells; the type species is considered to be *S. macilentus*, Wiedemann, the figure of which in *Nova Dipterorum Genera* shows only two submarginal cells.

But Schiner says that in this species there are three submarginal cells, and moreover it is stated by Karsch that the specimen in Berlin has three of these cells. Here we have a question of type specimens; but I think that an original figure is always more important than a specimen, which may or may not be authentic. Besides the true type is not in Berlin, because Wiedemann writes: "In Westermanns Sammlung, auch im Berliner Museum." I think, therefore, that Loew is right in describing the first species with three submarginal cells as *S. leptogaster*, with which the *S. macilentus* of Schiner and Karsch may be identical, and that Macquart is right in assuming *S. macilentus* to be a species with only two submarginal cells. *S. clavatus*, Karsch, and *S. holaspis*, Speiser, both with three submarginal cells, are probably the same as *S. leptogaster*, Loew; and thus *S. miobrochus*, Speiser, becomes an unnecessary change of name.

In 1880 Karsch added to the confusion by attempting to form a separate genus called *Cephenus* for the species with only two

* Il genere *Systropus* Wied. nella fauna paleartica. *Redia*, 1905, pp. 262-279.

Sobre tres interesantes dipteras de S. Paulo. *Broteria*, 1912, pp. 76-84.
Ditteri raccolti del Prof. Silvestri durante il suo viaggio in Africa del 1912-1913. *Boll. Portici*, 1914, pp. 283-285.

submarginal cells and assigning to *Systropus* the species with three submarginal cells. The author in question was misled by two errors: (1) that Africa has only species with three submarginal cells; (2) that the species from Asia and Africa with two submarginal cells have unarmed tibiae. These two mistakes were corrected in 1897 by Wandolleck, who however speaks of "*femora postica aculeata*," while there are no species with spinose femora.

The biology of some species is known. *S. crudelis* has been bred, like its South American congener, from pupae of *Limacodidae*, a strange family of nocturnal Lepidoptera. But a species described in the following pages has different habits (see *S. bicuspis*, p. 126). The species of *Systropus* mimic different groups of Aculeate Hymenoptera, the red and brown species with long-stalked abdomen having an *Ammophilous* appearance, while the yellow and black species with short-stalked abdomen are very like some *Pelopoëus*(*Sceliphron*)-forms.

I give below a diagnostic table of the Ethiopian species of *Systropus* known to me; in this table I take as the primary character the separation of the eyes, which are rather wide apart in some species. This separation is, however, not so pronounced as in *Dolichomyia*, the eyes being always contiguous; it is perhaps only sexual and confined to the female:—

- 1 (6). Eyes, at least in ♀, closely approximate, but not touching, frons being visible between them as a narrow stripe extending to ocellar tubercle; abdomen with stalk formed by three, and club by four, segments.
- 2 (3). Three submarginal cells present; pteropleura and squamae bare; species of very large size, and reddish and brown colour, with wings broadly yellow at base and on fore border.*marshalli*, sp. nov.
- 3 (2). Only two submarginal cells present, but sometimes there are short stumps of rudimentary, dividing cross-veins; species of medium size, with differently coloured wings.
- 4 (5). Yellow and black species, with hyaline wings, having only costal cell slightly infuscated; pteropleura and yellow, black-spotted metasternum rather bare; callosities at sides of scutellum yellow; lower genital lamella of ♀ black, with three very long, sharp-pointed black spines.*trispinosus*, Bezzi.
- 5 (4). Red and black species, with broad brown fore border to wings; pteropleura and entirely black metasternum rather long pubescent; scutellar callosities black; lower genital lamella of ♀ red, with two short rounded lobes.*crudelis*, Westw.
- 6 (1). Eyes in both sexes touching for a considerable distance, frontal triangle being usually half as long as distance between base of antennae and vertex.
- 7 (8). Three submarginal cells present, front coxae pale yellow; pteropleura and metasternum rather pubescent; scutellar callosities pale yellow; abdominal stalk very long and thin, formed by four segments, club thus being formed by only three segments. ...*leptogaster*, Loew.*

* In the South African Museum, at Cape Town, there is a new species, which I have named *S. sanguineus*; it is closely allied to *S. leptogaster*, but differs in having the front coxae red, not yellow; in having no yellow prothoracic stripe; and in the first posterior cell not being narrowed at end.

- 8 (7). Only two submarginal cells present.
- 9 (14). Abdominal stalk long, formed by three or four segments, club being formed accordingly by four or three; face almost bare below antennae; pleurae with argenteous pubescence; scutellar callosities pale yellow; hind legs brown and red.
- 10 (11). Abdominal stalk long and thin, formed by four segments, club formed by three segments, and red in part; wings hyaline, half so long as abdomen, with alula well developed; pteropleura and metasternum rather pubescent; mesonotum very rugose with a small yellow spot at each of the four corners; front coxae pale yellow; first antennal joint very thin, longer than two following joints together, second being very short and almost bare on sides; squamae shortly ciliated.
- rugosus*, sp. nov.
- 11 (10). Abdominal stalk shorter, formed by three segments only, club formed by four, and black with or without whitish markings; wings darkened, almost so long as abdomen, without distinct alula; pteropleura pubescent, but metasternum almost bare; squamae bare; mesonotum finely punctate; front coxae reddish; first antennal joint rather thick, so long as following two joints together, second joint being half so long as third, and ciliated on sides.
- 12 (13). Abdominal club entirely black and opaque owing to rather dense and short, sericeous pubescence; no yellow markings on front of thorax. *sericeus*, sp. nov.
- 13 (12). Abdominal club with whitish markings and very shining, being clothed only with sparse pubescence; thorax with yellow markings on fore border. *silvestrii*, Bezzi.
- 14 (9). Abdominal stalk very short, formed by only two segments, club being formed by five; face with a dense tuft of hair below antennae; pleurae devoid of argenteous pubescence; scutellar callosities dark coloured; hind legs with a striking yellow and black coloration; pteropleura, metasternum and squamae bare.
- 15 (16). Lower lamella of ♀ genitalia with two very long and sharp black points; abdominal club thin, clothed with very short and dense sericeous pubescence; smaller and more slender species.
- bicuspis*, sp. nov.
- 16 (15). Lower lamella of ♀ genitalia with two obtuse black lobes; abdominal club broad and thick, almost bare; larger and more robust species. *trigonalis*, sp. nov.

88. *Systropus marshalli*, sp. nov.

A beautiful species of more than usually large size, very distinct from any other on account of the separated eyes, the three submarginal cells, and the peculiar coloration of the wings.

Type ♀, a single specimen from Mashonaland, Salisbury, 26 January, 1902, collected by *Dr. G. A. K. Marshall, C.M.G., F.R.S.*, in whose honour this magnificent species is named.

S. snowi, Adams (1905), described from a specimen caught at Salisbury in January, is possibly allied to the present species; the former, however, has a differently coloured body and uniformly infuscated wings, with only two submarginal cells; moreover, the author says nothing about the condition of the eyes.

♀. Length of body 22 mm.; length of wing 18 mm.; length of antenna 4 mm.

Occiput black, densely grey tomentose, with a narrow, black, perpendicular stripe from vertex to insertion of neck, almost bare, with a few fuscous hairs towards middle. Ocellar tubercle

reddish-yellow, bare; frons opaque, reddish-yellow and bare, with a narrow silvery tomentose band in front of antennae; at level of antennae frons is twice as broad as base of antennae, while near vertex it is half as broad as ocellar tubercle; eyes therefore separated throughout whole frontal length. Eyes of reddish-brown, darker above; central anterior facets slightly enlarged. Face a little broader than anterior extremity of frons, and becoming broader towards mouth, coloured like frons but shining, with a tuft of short, dense fuscous hairs below base of antennae; cheeks and jowls very narrow, reddish with a silvery sheen; chin reddish, with rather long yellowish hair, like lower part of the occiput. Antennae long and erect, directed obliquely forwards; first joint rather thickened, entirely reddish-yellow, with short pale pubescence, nearly as long as two following joints together; second joint short, only one-quarter as long as first, reddish-yellow, pubescent like preceding; third joint entirely black, bare, lamellar, elongate oval, rather obtuse at end, without a style. Proboscis 7 mm. long, black above except base, reddish-yellow beneath; labella entirely black, bare, not rolled back; palpi long, yellow, linear, with short pale pubescence. Thorax smooth, black, with very short yellowish pubescence on back, grey dusted on pleurae; humeri and postalar calli reddish-yellow; a broad spot above humeri and teguliform lobe above base of wings red; scutellum entirely dark reddish, with short pale yellowish hairs on hind border; pleurae black, with a broad spot above front coxae, lower part of sternopleura and metapleura red; pleurae, including pteropleura, bare; metasternum strongly swollen, prominent in middle, rugulose, with sparse pale greyish pubescence, black above and dark reddish below. Scutellar callosities (*Schildchensteg* of German authors) black, their inner thirds red. Squamae dark reddish-brown, borders almost bare; halteres with thin reddish stalks and broad flattened knobs, which are black above and pale yellowish below. Abdomen long, with a long stalk; first segment broad and thick, black, dark reddish at base, with pale yellowish pubescence on back and rather long hairs on sides; second, third and fourth segments forming stalk, which is entirely red above and below, with very short whitish pubescence on third and fourth segments, and a scarcely distinguishable dark stripe on each side below; fifth segment broad, red, with black hind border; sixth and seventh segments black, with dark reddish lower borders and pale sericeous pubescence; eighth segment entirely red, dimidiate, carinate above, triangular in shape; lower lamella of genitalia very long, tubular, obtuse at end, entirely red, and with rather long pale yellowish pubescence, like that on the eighth segment. Front legs with coxae and trochanters reddish-yellow, but femora near base beneath and tips of tarsi blackened; tibiae on outer side with white tomentum, which becomes pale yellow on first tarsal joints. Middle legs like front pair, but with femora more broadly black. Hind legs

with coxae and trochanters black above, reddish below; femora with basal half black and apical half red; tibiae pale reddish-yellow, whitish tomentose on outer side; tarsi red, with black tips. Legs bare, with very short pale tomentum, which on hind tibiae is arranged in rings; spines on hind tibiae black, but those of external row in part of dark reddish-yellow; they are 6, 5, 8; first joint of hind tarsi with many black and dark yellow spines beneath; claws entirely black, very stout; pulvilli yellowish or reddish. Wings long and broad, with yellow veins, which are darkened at tips; their yellowish tinge extends from costa to third longitudinal vein, passing to a dark brown at apex and extending to sixth vein on basal half; discoidal and three posterior cells almost entirely hyaline. Subcostal cell narrowed at tip; upper branch of third vein perpendicular in its basal part, and cross-vein dividing first submarginal cell in continuation with and half as long as it; first posterior cell narrowed at end; middle cross-vein situate beyond the middle of discoidal cell, which is rather narrow and has its terminal vein S-shaped, but angulate in middle, and there provided with a stump of a vein projecting into discoidal cell itself; axillary lobe broad and long.

The British Museum also possesses a ♂ specimen of *S. marshalli* from Belgian Congo, Kambove, Katanga, 4,000-5,000 ft., 13 February, 1907 (*Dr. S. A. Neave*), which may be considered as the type ♂. It differs from the ♀ in having the eyes close together, but nevertheless separated by a narrow line. Thorax and scutellum entirely black above, only red supra-alar patch present. Abdominal stalk entirely dark brown or blackish. Hind legs for most part blackish, only femora broadly reddish towards tips. Genitalia reddish, rounded and swollen, without appendages. Wings with basal cells for most part hyaline, basal yellowish pattern being thus more restricted than in ♀.

89. *Systropus crudelis*, Westwood (1876).

A black and red species, with long-stalked abdomen and with an *Ammophila*-like facies, *S. crudelis* is recognisable at once on account of the sharply defined dark brown anterior border of the wings.

Described from Natal and Damaraland, without indication of sex and badly figured; the British Museum possesses two ♀♀ from the Cape Province, Transkei (*G. C. Barrett*), which agree with the variety from Damara.

Head and antennae as in foregoing species, but frons narrower, being at narrowest point only as broad as anterior ocellus; it is also of a darker colour, with antennae situate on a pale yellowish tubercle; blackish hair below base of antennae longer and denser; proboscis only narrowly red at base; palpi very dark reddish. Mesonotum rugulose above, with four broad rounded spots of a reddish colour, situate on humeral angles and in front of and above base of wings; pleurae black, with irregular red

spots in middle and below; pleurae clothed with rather long pubescence, chiefly on pteropleura and on metasternum, which is much less swollen than in preceding species. Scutellum black; squamae brown, with rather long white fringes; halteres dirty yellowish, with paler knobs. Abdomen with very distinct basal red stripe on black first segment; three segments forming stalk are entirely red; in distal clavate portion, only last two segments are for most part black, with pale pubescence; lower genital lamella red, pale pubescent, ending in two broadly rounded short lobes. Spines on hind tibiae and first joint of hind tarsi entirely black, those on hind tibiae being 6, 6, 5; hind tarsi red, with black tips. Wings very short and narrow, with peculiar dark brown pattern, occupying anterior third; veins black, disposed as in foregoing species, upper branch of third vein bent at a right angle, and sometimes provided with an appendix; external vein of discoidal cell much less S-shaped, almost straight in middle portion, and devoid of an appendix. Limit of fuscous stripe on fore border is at base on fourth vein, in middle on third (middle cross-vein being shaded on its upper part only), and at apex on second, passing only a little beyond it.

90. *Systropus leptogaster*, Loew (1860).

Closely allied to preceding but smaller, and readily distinguishable owing to abdominal stalk being longer and thinner, and to absence of a brown fore border to wings, and presence normally of three submarginal cells.

The species was described originally from a ♀ (erroneously believed to be a ♂) from Caffraria; Schiner has recorded it from the Cape under the name *S. macilentus*, and it is very probable that *S. clavatus*, Karsch, likewise from the Cape, is the same species, *i. e.* the common variety of it in which the abdominal stalk is entirely red above. It is probable that Wiedemann had a form of the present species before him when describing the genotype *S. macilentus*, chiefly because the apical cross-vein may be accidentally absent; the colour of mesonotum seems also to be variable, being more or less red on the sides. But at present, not having seen specimens which may be referred to *S. macilentus*, I prefer to leave the question undecided.

There are in the British Museum an old ♂ specimen from Port Natal (*Gueinzus*), and a ♂ and ♀ from the same locality, January, 1913 (*K. H. Barnard*); there is also an undersized, damaged specimen, minus half of its abdomen, from Kenya Colony, Nandi Plateau, 5,700-6,200 ft., 30 May-4 June, 1911 (*Dr. S. A. Neave*), which seems to show the characters of this South African species. From the pair of specimens collected by Mr. Barnard it is possible to make out the sexual characters, which are quite distinct. In the ♂ the eyes have the anterior central facets much enlarged, while the eyes themselves are united for a space distinctly longer than half the distance between the vertex and the base of the

antennae; the four segments forming the abdominal stalk are entirely red above (thus agreeing with *S. clavatus*, Karsch, of which the sex is not indicated by the author); the lower genital lamella is shining dark reddish, clothed with short black hairs, and ends in two rounded contiguous lobes, each of which seems to bear a smaller apical, movable joint; the upper lamella is short, and semilunar; the genitalia have on the sides a black, and on middle a yellow triangular hook. In the ♀ the eyes have the anterior facets less enlarged, and are united for a space distinctly shorter than half the distance between the vertex and antennae, the frontal triangle being therefore almost twice as long as that of the ♂; on the abdominal stalk there is a dark or black longitudinal stripe, at least on the first three segments; the last or eighth abdominal segment is of a somewhat tubular shape, ending in a triangular opening, in which is concealed the lower lamella and from which project the black, acute, pale-haired cerci in shape of a single pointed process.

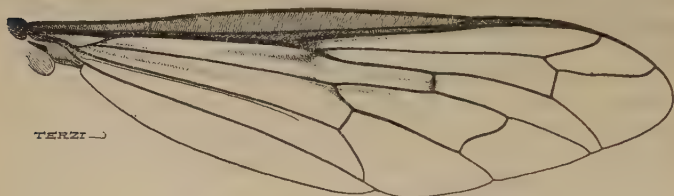


FIG. 8.—*Sytropus leptogaster*, Lw. Wing of ♂. × 8.

The following additional particulars may be added to Loew's description: Ocellar tubercle red. First antennal joint rather thick, more or less dark reddish at base, shortly pilose; second joint ciliated, one fourth as long as first; third joint bare, lanceolate and laminar, twice as long as second. Face with very sparse hairs below antennae, not forming a distinct tuft. Palpi reddish yellow, pale-haired. Surface of mesonotum finely granular; postalar calli narrowly reddish; teguliform lobe above base of wings bears a narrow yellow line, which is frequently interrupted in middle, and is often scarcely visible; scutellar callosities pale yellow; on scutellum there is, perhaps accidentally, no trace of three furrows described by Loew; pteropleura and metasternum with short pubescence, which is a little longer in ♂. Squamae yellowish, bare. Spines on hind tibiae strong, series consisting respectively of 3-4, 5-6, 4-5; claws black; hind tarsi entirely black. Wings with black veins; apical cross-vein of discoidal cell gently curved and S-shaped; cross-vein forming third submarginal cell not perpendicular as in *S. marshalli*, but oblique, making an obtuse angle with basal part of cubital fork, instead of being in same line with it, as in that species.

91. *Systropus rugosus*, sp. nov.

A rather aberrant, small species of *Ammophila*-like appearance, distinguished by its deeply rugose mesonotum, very long and thin abdominal stalk, long antennae and short wings, which have a well-developed alula.

Type ♂, type ♀, and two additional ♂♂ from W. Africa, Ashanti, Obuasi, June–August, 1907, "caught on umbelliferous flowers" (Dr. W. M. Graham). This is the only species of its genus known to me which has a well-developed alula. Judging from Speiser's description, it would appear to present a superficial resemblance to *S. holaspis*, Sp., from Cameroon, which has, however, three submarginal cells in the wings.

♂♀. Length of body 13.5–15 mm.; of wing 7.5–8 mm.; of antenna 3.6–4 mm.; wing-expanse 17–18 mm.

Deeply hollowed occiput black, dark grey dusted in the centre, white dusted near eye-borders, entirely bare, only below with some pale hairs, continuous with sparse white beard; ocellar tubercle dark red, very small. Eyes purplish-black, similarly shaped in both sexes, only middle anterior facets being a little larger in ♂; upper inner margins of eyes narrowly united posteriorly in ♂, but in contact for a much longer distance in ♀; frontal triangle slightly broader in ♀, but in both sexes very narrow and very acute above, yellow, densely white dusted, a little darker near the base of antennae and with the extreme upper vertex black. Face yellow, with only a few, hardly visible hairs below antennae, white dusted on sides, cheeks and jowls; peristoma and chin yellow. Antennae entirely black, inserted on a pale yellow tubercle; first joint distinctly thicker and longer than in other species, with some short hairs near base above, one and a half times as long as following two joints together; second joint very short and rather bare; third joint flat, lamellar, lanceolate, bare, obtuse at end and greatly attenuate at base, four times as long as second joint, and half as long as first. Proboscis entirely black, with labella rolled back, 3.5–4 mm. long; palpi blackish, more thinner and more hairy than in other species. Thorax black on dorsum, bare, somewhat shining, deeply and strongly punctate and rugose; humeral calli, a narrow spot near their posterior end and in contact with it, postalar calli and sometimes a small spot on sides of suture yellow. Pleurae entirely black, rugulose and densely clothed with argenteous pubescence, which is a little longer on pteropleura and on metasternum, which is not much developed. Scutellum black, punctate and rugose like thorax, with sparse argenteous pubescence on hind border, and sometimes with one or two longitudinal furrows in middle. Scutellar callosities yellow; squamae dirty yellowish and bare; knobs of halteres deep black, stalks mainly yellowish, knobs whitish-yellow beneath. Abdomen very thin and long; first segment black,

punctate, with short whitish pubescence, chiefly on sides; second, third, fourth and fifth segments thin and cylindrical, forming stalk; they are black above and reddish below, and become redder towards end, thus fifth segment is mainly red even above; sixth, seventh and eighth segments forming small club, are red on sides and below, but last two are more or less broadly black, above; they are clothed with very short pubescence, which is darker on dark parts, and yellowish or reddish on sides. Lower lamella of ♂ genitalia short, simple, and red; genitalia provided with three black hooks, middle one of which is thick and obtuse, while outer ones are acute and bent outwards. Lower genital lamella of ♀ ending in a kind of compressed, obtuse appendage, which is red basally, and shining black, and pale pubescent on apical half. Front coxae pale yellow (an indistinct yellow spot above them on propleura); front femora, tibiae and first joints of tarsi likewise pale yellow, tibiae and first tarsal joints white dusted on outer side; four last tarsal joints black. Middle legs almost entirely dark brown, only knees and under sides of femora



FIG. 9.—*Systropus rugosus*, sp. nov. Wing of ♀. × 8.

reddish, tibiae on outer side and base of first tarsal joints yellowish. Hind legs blackish-brown, the femora reddish-yellow beneath, tibiae yellowish on outer side at end, the tarsi entirely black; spines on hind tibiae black, their numbers respectively 5-4, 5, 4-5; hind tibiae markedly clavate at tip; claws black. Wings short, entirely greyish hyaline, with faint but distinct dark tinge at apex and on hind border, due to microscopic pubescence; veins black, thick and peculiarly arranged; second longitudinal vein almost straight throughout its whole length, only a little bent at end; cubital fork is longer and less broad than in other species, its upper branch being only gently curved; middle cross-vein situate on middle of discoidal cell; first posterior cell with parallel sides throughout its length, and not narrowed at end; discoidal cell rather short and broad. Alula well developed, rounded, broad, glassy and with bare margin.

92. *Systropus sericeus*, sp. nov.

A medium-sized species very like *S. leptogaster*, but distinguished by different coloration of body and by presence of only two submarginal cells in the wings.

Type ♂, a single specimen from W. Africa, Ashanti, Obuasi, 20 June, 1907, "caught on flower" (*Dr. W. M. Graham*).

The present species is closely related to *S. silvestrii*, described recently by me from S. Nigeria (Lagos), but is distinguished by the characters given in the table; the species from Sierra Leone identified by Walker as *S. macilentus*, Wied., would at any rate appear to belong to the same group.

Length of body 14 mm.; of wing about 10 mm.; of antennae 4 mm.; wing-expanse 22 mm.

Head and eyes as in preceding species, but eyes united for a very long distance, equal to about twice interval between vertex and antennae; ocellar tubercle almost black. Face below antennae blackish and with short, sparse black hairs. Antennae entirely black; first joint rather thick, as long as following two joints together; second joint ciliated, as long as one-third of first; third joint twice as long as second, lamellar, lanceolate, broadly obtuse at tip, and not attenuated at base. Proboscis 3 mm. in length, black, dark red beneath at base, with labella red on inner side; palpi not visible in case of type. Thorax black, finely punctulate, with sparse grey tomentum; humeri narrowly yellow, and with a very faint trace of a yellow streak above them; pleurae entirely black, with short whitish pubescence, which is longer on pteropleura; metasternum not swollen. Squamae brownish, with sparse dark hairs on borders; lateral callosities of scutellum pale yellow. Scutellum black, with short black pubescence on hind border; halteres with brownish stalks and white knobs, basal half of knobs black. Abdomen entirely black, with short, dark, sericeous pubescence, and only short greyish hair on sides of first segment; second, third and fourth segments forming stalk, and whitish and whitish pubescent on sides beneath and on venter; genitalia shaped as in preceding species, black and black-haired, with four black joints, middle one being divided into two. Front legs with the coxae reddish-yellow, last four tarsal joints black, tibiae and first tarsal joints whitish on outer side. Middle legs similarly coloured, but coxae and femora below in great part blackish brown. Hind legs dark reddish, with femora darkened above, and tibiae and tarsi almost black, but paler beneath; spines on hind tibiae black, their numerical arrangement being 4, 6, 4; claws black; pulvilli yellowish. Wings slightly infuscated, but darker in costal, subcostal and marginal cells, and in anterior part of first basal cell. Veins black; cubital fork long with upper branch regularly bent at base; middle cross-vein placed a little beyond middle of discoidal cell, which is rather broad and has its external vein long and S-shaped; first posterior cell narrowed at end; axillary lobe long and rather narrow; alula not distinct.

93. *Systropus bicuspis*, sp. nov.

An exceedingly well-differentiated species owing to the shortness of its abdominal stalk; the latter is formed by only two segments, which are whitish and adorned with a black triangular spot above in the middle; the yellow and black hind legs are also very distinctive.

Type ♀, a single specimen from Southern Nigeria: Lagos, Yaba, 11 April, 1911 (*Dr. A. E. Neale*). With this specimen there is mounted a pupa-skin, and the attached label reads: "Bred from pupa, parasitic in cocoons of *Stenomutilla beroe*, Péring." This is a very interesting fact, since all the other species, the metamorphosis of which is known, have been bred from cocoons of Limacodidae (Lepidoptera); the discovery of parasitism on Hymenopterous insects is thus very important.

The present species in conjunction with the following one forms a very peculiar group, differing from the other African species and seeming to mimic Sphegid wasps of the genus *Pelopaeus*, or its allies.

Occiput hollowed out, black, grey dusted near eye-borders and below; ocellar tubercle red, not very prominent. Eyes black, with upper central facets a little enlarged; eyes united for a short space, which is only about one-fourth as long as distance between vertex and antennae; frontal triangle narrow and long, very acute above, its upper half deep black, lower half yellow and white dusted. Face blackish, clothed with a dense tuft of short black hair; cheeks, jowls and peristoma yellow, overspread with argenteous shining dust; chin dark brownish, with a few grey hairs. Antennae situate on a pale yellow, broad, oval tubercle; first joint dark reddish, dark pilose, rather thick, a little shorter than following two joints together; second joint black, a little less than one-third of first in length with rather long black cilia; third joint more than twice as long as second, black, lamellar, broad, not attenuate at base and ending in a short point. Proboscis black, but red beneath, 4 mm. long; palpi yellow, thick, almost bare. Thorax black, finely punctulate, with a broad longitudinal middle stripe of grey dust; humeral calli yellow, and above them anterior and lateral borders dark yellow; posterior half of teguliform lobe above root of wings, and postalar calli red; pleurae black, bare, with a reddish spot above coxae; metasternum swollen, with short and dense black pubescence; scutellum black, with short whitish pubescence and a dark red spot on each side at base; scutellar callosities dirty yellowish, rather dark; squamae brownish, almost bare; halteres with yellow stalks and entirely white knobs. Abdomen proportionally short; first segment black and black tomentose; second and third segments narrowed, cylindrical, forming stalk, pale yellowish in colour and white tomentose, with a black triangular spot above, base of which is on hind border in each

case, while vertex does not reach front margin; fourth segment black, with whitish ring on fore border in contact with yellow border of preceding segment; fifth to eighth segments entirely black, clothed with dense, short, black, sericeous tomentum; club, formed by fourth to eighth segments, rather narrow and elongate. Lower lamella of genitalia shining black, black-haired and ending in two very long and sharp black points; cerci elongate, black, pale pilose above. Front legs with coxae entirely reddish, only last four tarsal joints black; coxae are clothed with argenteous dust, and tibiae and first tarsal joints are whitish tomentose on outer side. Middle legs very like front pair, only femora a little darker. Hind legs with coxae and trochanters dark yellowish; femora black, reddish at base, with a very broad yellow ring before distal extremity; tibiae deep black, with a broad praeapical yellow ring; tarsi black, first joint with a broad yellow ring before tip; spines on tibiae black, 5, 4, 5; claws black; pulvilli yellowish. Wings broad, entirely greyish hyaline, except that costal and subcostal cells are a little darker; veins black, except first and fifth, which are yellow; cubital fork very short and broad, with upper branch bent at angle; middle cross-vein situate much beyond middle of discoidal cell; first posterior cell narrowed at end; discoidal cell broad and short, with exterior vein S-shaped.

Pupal skin.—In general shape this agrees with Westwood's figs. 6, 7 and 8, Pl. X, *Trans. Ent. Soc. London*, 1876, or with figs. 5 and 6, Pl. IV, of Künckel d'Herculais, *Bull. scient. France et Belg.*, XXXIX, 1905. In colour it is yellowish-brown, brownish on the thorax and its appendages, and on the fore part of the head. A peculiarity is to be found in the point of the frons, which is less prominent than in the other known species; it is also distinctly double, showing two short points of triangular shape, separated by a broad depression. The first seven abdominal segments show on the back of the tergites, a little before their middle, a complete transverse row of chitinous spines, which have their points directed backwards, and are completely applied to the skin and not at all prominent; they are more than 40–45 in number in the first three rows, about 35–40 in the three following, and only 16 in the last. These seven segments bear besides on each side, exactly on the lateral border, stout curved seta or fleshy styliiform process.

94. *Systropus trigonalis*, sp. nov.

A robust species, strongly resembling a wasp of the genus *Pelopoeus*, like *P. spirifex*, and closely allied to the species just described, but readily distinguishable owing to its larger size and the very different lower genital lamella in the ♀.

Type ♀, a single specimen from Uganda: Entebbe, 14–25 May, 1912 (*C. C. Gowdey*); there are also a couple of specimens (including type ♂) from Kenya Colony: Ilala, Marama's District,

14 miles E. of Mumia's, 4,500 ft., 18-21 June, 1911 (*Dr. S. A. Neave*).

Head and its appendages as in *S. bicuspis*; ocellar tubercle distinctly more prominent; face paler; second antennal joint distinctly longer and broader, more than one-third of first in length; third joint also obviously longer and broader about as long as first. Thorax, as also squamae, halteres, scutellum and scutellar callosities as in *S. bicuspis*; teguliform lobe above root of wings, however, entirely red. Abdomen similar to that of *S. bicuspis* in shape and colour, but with club more than twice as broad; two segments forming stalk yellower, and their two black triangles shorter, their apices extending only a little beyond middle of respective segments; in addition there is beneath on each side a black longitudinal streak, more developed on second segment of stalk, of which there is no trace in *S. bicuspis*; short pubescence on abdomen sparser or even wanting, therefore black colour of club more shining. Lower genital lamella shining black, short and ending with two very obtuse and short, rounded lobes. Legs as in preceding species, but middle tibiae and tarsi entirely black, except that tibiae are narrowly yellow at tip; yellow rings on hind femora and tibiae broader, apical black part being narrower; first joint of hind tarsi entirely yellow, except at base and tip which are narrowly black; numerical arrangement of spines on hind tibiae 3, 5, 8. Wings as in *S. bicuspis*. ♂ very like ♀, but shows a broad yellowish stripe on the sides of mesonotum, extending from humeri just above notopleural suture to the red patch above the root of wings. Line of junction of eyes shorter than in ♀. Genitalia with upper lamella ending in two upwardly directed spines, which are red at base and black at tip; lower lamella subquadrate, concave above, bilobate below, each lobe ending in a rather obtuse point.

Subfamily V. *TOXOPHORINAE*.

Genus 14. *TOXOPHORA*, Meigen (1803).

The subfamily Toxophorinae must be restricted to the present genus and the American *Lepidophora*, the other genera placed in it by Verrall and Becker belonging to the *Cyleniinae*.

The following additions should be made to the diagnosis of the genus *Toxophora*: Eyes of ♂ with a few enlarged facets near the line of union, but these facets not sharply separated from the smaller ones. Palpi one-jointed. Face bare. A pair of strong ocellar bristles. Prothorax greatly developed. Metapleura bare. Thoracic macrochaetae very strong and long; there are 4-5 pairs of prothoracic bristles, the middle pair bent backwards, the outer 3-4 pairs bent inwards, the 2-3 exterior bristles very close together; a pair of dorsocentral and a pair of acrostidal bristles, both placed far forward; two pairs of

notopleural bristles, situate above the notopleural line; many pairs of anterior and posterior supra-alar bristles, all of which are directed backwards; the pleurae have only one bristle on the upper border of the mesopleura, directed upwards. Squamae with numerous, long, rigid, white cilia. Scutellum flat, with the hind border having a straight truncation in the middle, and bearing many pairs of partly decussating bristles. Legs very stout and short, and also very bristly; tibiae with two to five long spurs at the tip; hind coxae with three or even more white macrochaetae, which are the only white ones on the entire body. Wings with well-developed alula, and with the axillary lobe devoid of ambient vein; the costa is distinctly spinulose on the outer side to the end of the first vein.

Moreover, the Ethiopian and Mediterranean species of *Toxophora* exhibit a peculiar sexual character in the bristles on the legs. In the ♂, the hind femora have beneath on the basal half an exterior row of two or three very strong and widely separated macrochaetae, and another interior one still nearer the base; the middle femora have a similar row of five or six shorter bristles; the middle tibiae bear at the base on the posterior side a single long bristle. All these bristles on the femora are wanting in the ♀, which has a row of from four to six strong bristles on the posterior side of the middle tibiae.

The metamorphosis of some species of *Toxophora* has been observed in Europe and North America, and in both continents they have been bred from wasps' nests; such a life-history, it may be added, is already suggested by the yellow and black colours of many species. The general appearance of such forms strongly resembles that of the Hymenopterous genus *Leucaspis*, which has similar habits, and perhaps points to convergence. A similar form of body is to be found also in the Cyrtid genera *Philopota* and *Thyllis*.

Loew states that the Mediterranean type species, *T. maculata*, Rossi, is also to be found in South Africa; and Karsch, in his paper on the genus published in 1887, records the same species from the Cape. *T. maculata* is, however, not represented among the many African specimens of the genus before me, and one might therefore be disposed to be doubtful as to its occurrence in the Ethiopian Region. I suspect that Loew had before him the very similar *T. diploptera*, Speiser, which in the case of badly preserved specimens may be confounded with *T. maculata*. Nevertheless, I have included *T. maculata* in the following diagnostic table, since I have now seen specimens from the Cape:—

- 1 (4). First antennal joint thin and almost entirely devoid of scales; cross-vein between discoidal and second posterior cells short and angular, or nearly so; second longitudinal vein and upper branch of cubital fork are only slightly bent upwards at end. Smaller species, with narrow, slender body.
- a (b). Cross-vein between discoidal and second posterior cells provided with a strong appendix. *epargyra*, Herm.

- b (a). No appendix on above-named cross-vein.
- 2 (3). Wings entirely hyaline, with middle cross-vein situate on middle of discoidal cell; argenteous tufts at base of antennae well developed; abdomen white-scaled, with four rows of oblique, black spots; legs with numerous argenteous scales. *vitripennis*, Bezzi.
- 3 (2). Wings intensely infuscated on anterior half, dark-spotted on cross-veins, and with middle cross-vein beyond middle of discoidal cell; tufts on side of antennae usually blackish; abdomen dark purplish scaled, with three more or less complete longitudinal yellow stripes; legs mainly black, with sparse argenteous scales. *maculipennis*, Karsch.
- 4 (1). First antennal joint thicker, and even appearing much stouter still, owing to its very numerous and dense scales; cross-vein between discoidal and second posterior cells long and usually gently curved; second longitudinal vein, and upper branch of cubital fork strongly bent upwards at their tips; middle cross-vein always situate beyond middle of discoidal cell. Species of larger size, with very broad, robust body.
- 5 (6). Cross-vein between discoidal and second posterior cells with upper end strongly bent, it is therefore rather angular in middle; abdomen with three broad and complete yellow longitudinal bands; wings infuscated, with broad and diffused dark spots. *trivittata*, Bezzi.
- 6 (5). Above-named cross-vein is gently S-shaped, with its upper end not bent; abdomen not trivittate, and wings with different pattern or without a pattern at all.
- 7 (8). Wings without pattern, never infuscated nor spotted on cross-veins, only with a faint yellowish suffused tinge on anterior half; first antennal joint with numerous white scales on outer side; abdomen densely yellow tomentose, with four longitudinal rows of rounded or subquadrate black spots; ♂ genitalia distinctly swollen. *maculata*, Rossi.
- 8 (7). Wings more or less infuscated, sometimes with anterior half black, and usually with dark-spotted or dark-shaded cross-veins.
- 9 (12). Wings faintly infuscated, always with spotted or shaded cross-veins; first antennal joint with sparse white scales; abdomen usually yellow tomentose, with from two to four more or less distinct rows of subquadrate black spots on back.
- 10 (11). Infuscation of cross-veins very dark, forming broad, rounded spots; abdomen with four well-developed longitudinal rows of purplish-black spots. *punctipennis*, sp. nov.
- 11 (10). Infuscation of cross-veins much fainter and not spot-like; abdomen with distinct bluish scales, and with longitudinal rows of spots less distinct and less regular. *diploptera*, Speiser.
- 12 (9). Wings with anterior half or two-thirds blackish, cross-veins being thus included in general infuscation; first antennal joint with a row of dense and long argenteous scales on outer side; abdomen blue scaled, with three narrow longitudinal stripes of white scales.
coeruleiventris, Karsch.

95. *Toxophora maculipennis*, Karsch (1886).

A slender, narrow-bodied species, distinguished by its prevalent black colour, thin and not scaled first antennal joint, and infuscated and spotted wings.

Originally described in the ♂ sex from Pungo Andongo: the British Museum possesses some well-preserved ♂♂ from Ashanti, Obuasi, May–November, 1907, “caught on flowers or in bush” (*Dr. W. M. Graham*); and a couple of specimens from the Gold Coast, Aburi, 1912–1913 (*W. H. Patterson*). The species seems to be a West-African one, which has nothing to do with the very different *T. carcelii*, Guérin-Méneville, *Zool. Mag.*, I, 16 (1831),

from Senegal, a species completely overlooked in the catalogues, and possessing hyaline wings and different abdominal pattern. It is yet to be seen whether the present species proves to be the problematic *Toxophora (Eniconeura) fuscipennis*, Macquart (1840).

To Karsch's description should be added: Patches of scales on frons, at sides of base of antennae, which are argenteous or yellow in all other species, dark or even black; first antennal joint with only a few dark scales outside and black-haired beneath; second and third joints more sparsely and more shortly feathered than in other species. Palpi very long, black, bent upwards, densely but shortly pubescent above, and with four to six widely separated, long dark hairs beneath. Occipital borders of eyes with blackish scales, and narrowly purple-coloured near eyes. Thoracic chaetotaxy normal; hypopleura with a band of argenteous scales continued over hind coxae; knobs of halteres and squamae white, latter sometimes with yellowish cilia between white ones. Abdomen above purplish-black, and even in well-preserved specimens middle band reduced to very small spots on hind borders of last segments, while lateral bands are continuous but strongly indented on outer borders by triangular spots. Venter with very sparse white hair near base. Abdomen truncate at end; first segment in middle of sides with some black or dark yellowish bristles; ♂ genitalia concealed, not at all swollen. Legs are entirely black, femora having only sparse white scales, and front and middle tibiae having only an argenteous spot near tip on upper side. Wings with peculiarities of venation as indicated in the table; apical cross-vein with no trace of appendix at point where it is bent at an angle; veins black, costa clothed with dark purplish scales at base.

96. *Toxophora trivittata*, Bezzi (1908).

Readily recognisable by its broadly and regularly yellow trivittate abdomen, and by the wings, the anterior halves of which are infuscated, having no spots on the cross-veins; the strongly recurved upper end of the apical cross-vein of the discoidal cell is also very characteristic.

A brief diagnosis of the ♂ type from Belgian Congo, Boma, was given by me in *Ann. Soc. Ent. Belg.*, T. LII, p. 375 (1908). The collection before me contains two ♂ specimens, taken respectively in N. Nigeria, Zungeru, November, 1910 (*Dr. J. W. Scott Macfie*), and N.-W. Rhodesia, Chilanga, 4,030 ft., "on wet log in drift of stream" (*R. C. Wood*).

The present species forms a connecting link between the first (*T. vitripennis*—*T. maculipennis*) and the second group (all the following species). Since my memoir on the Diptera from Belgian Congo in the collection of the Belgian Museum has never been published, I give here a description taken from the as yet unknown ♂. The coloration of the present species is strongly reminiscent of that of the oriental *T. javana*, Wied.

The dimensions vary between 6 and 8 mm. Occiput densely yellow tomentose, with short pale yellowish hairs in middle, but with a broad band behind vertex, equal in depth to upper third of eye, clothed with purplish-black scales; there is also a little triangular black spot on eye-border on level with middle of eye, and below this scaly tomentum is dirty whitish not yellow; sparse and short hairs forming beard likewise whitish. Ocellar tubercle very small, black, bare, with two strong black bristles, ocelli arranged in an equilateral triangle. Eyes brownish-red, not spotted, in contact above for a space four times as long as ocellar tubercle. Frontal triangle twice as broad as ocellar tubercle, black, grey dusted, but almost entirely concealed beneath long yellow scales, which form on each side a tuft which is directed forwards from base of antennae. Face black, dark grey dusted, bare; jowls very narrow, linear, shining white; chin broad, black, dark grey dusted. Antennae black; first joint as long as following two joints together, thinner than in all species subsequently mentioned, but provided with rather abundant purplish-black scales, and with a complete stripe of white ones on outer side, first joint beneath near base with usual, long, dark hairs; second joint half as long as first, distinctly broader at end than at base, and with short black pubescence on sides; third joint as long as second, elongate conical, very acute at tip, and with short black pubescence on sides. Proboscis black, 3 mm. long, with pubescent terminal labella; palpi half as long as proboscis, curved, bare above and with some scattered dark hairs beneath. Thorax and scutellum black, with purplish-black scales, and with dense, short, pale yellowish pubescence on prothorax and on sides of mesonotum; these parts also clothed with dense, scaly, golden-yellow tomentum showing a tendency to form three longitudinal stripes, one more distinct on each side, and a third narrower and less developed in middle line; these three stripes pass over scutellum, hind border of which is clothed with yellow scales, and are in continuation with those on abdomen. Thoracic chaetotaxy normal. Pleurae grey tomentose, bare, only mesopleura with golden yellow hairs; an argenteous stripe on hypopleura, continued over hind coxa. Knobs of halteres and squamae white, latter with dense, long, white cilia. Abdomen black, bare, with some pale yellowish bristly hairs in middle of sides of first segment; dorsum clothed with purplish-black scales along two broad, parallel, longitudinal stripes, and with yellow ones along three stripes alternating with preceding; these three yellow stripes of equal breadth, and even middle one complete, extending equally developed from base to tip; venter clothed at base mainly with whitish, and at tip mainly with yellow scales, and also with some whitish hairs at base; between yellow lateral stripes and yellow venter there is on each side a black stripe, which is somewhat indented on hind margins of segments.

Genitalia black, concealed, not at all swollen. Legs black; coxae bare, strong, white scaled on anterior side, those of hind pair with usual three white bristles and some smaller hairs; femora and tibiae with usual characteristic ♂ bristles, but middle femora with a single short bristle; all femora on posterior side except tips, and all tibiae on upper side with dense white or yellowish scales; claws black; pulvilli greyish. Wings greyish hyaline, with black veins; costa with yellowish scales at base; costal cell pale yellowish hyaline; fuscous border extending to fourth vein, filling up apical half of discoidal cell, and forming distinct, but diffused darker spots in first submarginal cell, upper basal cell, and apical half of discoidal cell; cross-veins included in fuscous border, and thus devoid of darker infuscation; only vein at base of third posterior cell distinctly shaded. Course of cross-vein between discoidal and second posterior cell highly characteristic, cross-vein being almost angularly bent in middle.

97. *Toxophora punctipennis*, sp. nov.

Closely resembling *T. maculata*, Wied., but distinguished by the absence of white scales on the outside of the first antennal joint, and by the wings being infuscated and adorned with three distinct blackish, rounded spots.

Type ♂ and type ♀ from Natal, the first from Estcourt, September–October, 1896 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*); the second from Howick (*J. P. Cregoe*).

♂♀. Length of body 6.5–7 mm.; length of wing 5–5.5 mm.

Head and its appendages as described for preceding species; first antennal joint thicker, and clothed with much longer scales of a purplish-black colour; second joint only one-third as long as first; tufts on frontal triangle yellow in middle and argenteous on sides; frons of ♀ shining black, bare, a little broader than ocellar tubercle at vertex, becoming gradually broader anteriorly, and bearing two narrow argenteous tufts, one on each side near base of antennae. Palpi shortly pubescent above. Thorax and scutellum as in preceding species, but pubescence on sides of pronotum and mesonotum paler and in ♀ even white; there is also a yellow median stripe, prolonged on to scutellum. Abdomen with four rows of dorsal spots, as in *T. maculata*, spots being larger and often in contact with each other, of a purplish-black colour, and showing a tendency to form longitudinal stripes. ♂ genitalia not swollen, concealed. Legs as in *T. maculata*; middle femora of ♂ with only two bristles beneath. Wings with a very distinct pattern; costal cell pale yellowish hyaline; yellowish-brown infuscation not extending beyond fourth vein posteriorly, or beyond base of second submarginal cell apically; three broad, rounded, blackish spots as follows: one on middle cross-vein, one on basal part of upper branch of cubital fork, and one on upper end of cross-vein dividing discoidal from second posterior cell; inferior end of this same

vein and cross-vein at base of third posterior cell likewise with dark shading. Apical vein of discoidal cell broadly S-shaped, its upper extremity greatly prolonged towards wing-border. Costa with yellowish scales at base.

98. *Toxophora diploptera*, Speiser (1910).

Closely allied to *T. maculata*, but more robust, larger, and very distinct owing to genitalia of ♂ not being swollen, to abdomen being clothed with dark bluish scales, to wings being infuscated and spotted, and to third antennal joint being without or with only very sparse white scales. Originally described in ♀ sex from Usambara, this species seems to be widely distributed in East and South Africa, where it appears to be the most common species. I therefore think that Loew's and Karsch's *T. maculata* may, at least in part, be referable to the present species, which in well-preserved specimens has a very similar abdominal pattern, while in other cases the infuscation of the wings is less developed. The infuscation of the cross-veins was overlooked by the describer.

The British Museum possesses specimens of both sexes from Mashonaland, Salisbury, January-March, 1900 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*); from Natal, Junction of Blaauw Krantz and Tugela River, October, 1896 (*same collector*); and a ♀ from Pretoria (*Miss J. Brincker*), which shows the same abdominal pattern as in *T. maculata*, but has the third antennal joint clothed entirely with black scales. Speiser's description, which does not include the ♂, may be amplified as follows:—

♂♀. Length of body 8-10 mm.

Dark portions of body with a well-defined dark bluish tinge; yellow-scaled parts showing a tendency to become white or even argenteous, thus evidently indicating affinity with *T. coeruleiventris*. First antennal joint very thick, clothed with dense, long, bluish-black scales, which are pendulous beneath; white scales sometimes entirely wanting or scattered on upper and outer sides, but never forming a complete lateral stripe; tufts at base of antennae argenteous and strongly developed; second joint of antennae one-third as long as first, whitish pollinose above in ♂ and black pubescent on sides. Palpi pubescent above. Thoracic pubescence and tomentum often more white or argenteous than yellow; chaetotaxy normal. Abdominal pattern in well-preserved specimens very like that of *T. maculata*, but two central rows of spots broader, and showing tendency to form a continuous stripe, as always occurs in case of two lateral rows; if tomentum be yellow, it is always white at base of abdomen. ♂ genitalia very small, not at all swollen. Venter with tufts of sparse but long pale hairs, and clothed with argenteous scales; but sometimes each segment is devoid of scales in middle, thus forming black transverse bands. Legs as in *T. maculata*, ♂ having same bristles, and four to five short ones on middle femora; ground-colour of trochanters, and of apical

part of coxae, red. Wings with more or less distinct brownish-yellow infuscation on anterior half, this fuscous border extending to fourth vein or even beyond, being more intense in upper basal cell and at base of first posterior cell; entire costal cell and base of both basal cells yellowish. Middle cross-vein shaded, but included in dark border; basal part of upper branch of cubital fork more distinctly shaded; both ends of apical cross-vein of discoidal cell, and cross-vein at base of third posterior cell more or less distinctly shaded; apical vein of discoidal cell very long, broadly S-shaped, its upper end not recurved; discoidal cell proportionally broader than in allied species.

99. *Toxophora coeruleiventris*, Karsch (1887).

A beautiful species of large size, very distinct from any other on account of its blue abdomen adorned with argenteous stripes, and broadly blackened, unspotted wings. Originally described (both sexes) from Delagoa Bay: there is in the British Museum a ♀ which may be considered as a topotype, its provenance and collector (*Mrs. Monteiro*), being the same as in the case of the types in Berlin.

This specimen measures 11 mm. in length. Second antennal joint more than half as long as first, and densely feathered with black scales; palpi black, pubescent on upper side. Thoracic chaetotaxy normal. Venter in middle of base with three tufts of white hairs; first abdominal segment on sides with some white hairs. Hind tibiae densely clothed with dark scales, which form a distinct and long feathering on inner side. Wings with costa densely clothed with white scales from base to middle; costal cell brown like adjacent areas; cross-vein between discoidal and second posterior cell very long, broadly S-shaped, with upper end not recurved. Alula hyaline.

Subfamily VI. CYLLENIINAE.

Genus 15. *HENICA*, Macquart (1834).

This genus is rather aberrant for the present subfamily, since the second longitudinal vein is unusually short, springing from the third at almost a right angle and at a considerable distance from the origin of the third vein; thus the praefurca is much longer than in the allied forms, and approaches the condition seen in some *Lomatiinae*, in *Petrorossia* and the true *Eroprosopinae*. Verrall indeed places *Henica* in the latter subfamily; but the eyes are without an indentation in their hind border.

100. *Henica longirostris*, Wiedemann (1819).

A well-known and common South African species, characterised by its fenestrate wings, which show two supernumerary but constant and regular cross-veins in the marginal cell. There are in the British Museum a ♂ from Simon's Town, October, 1894

(the late *P. de la Garde, R.N.*), and a ♀ from Port Natal, from the old Saunders collection.

This species has a very complicated synonymy, which was elucidated by Loew and Becker, but is not clearly stated in the *Catalogus Dipteriorum*, V, pp. 69–70. *Cyllenina afra*, Macq. (1840) *nec* Wied., is a different species belonging to the genus *Nomalonia*; and *Cyllenina longirostris*, Wied. (1828) is the same as *Adelidea anomala*, Wied. (1821). I have seen specimens of *Nomalonia afra*, Macq. *nec* Wied., in the collection belonging to the South African Museum, Cape Town.

B. BOMBYLIIDAE TOMOPHTHALMAE.

Subfamily VII. LOMATIINAE.

Genus 16. **ANTONIA**, Loew (1856).

With this extraordinary and striking genus begins the series of the Bombyliidae Tomophthalmae, or forms in which the eyes have an indentation in the hind border.

The genus *Antonia* is evidently allied to *Lomatia*, but shows great affinity with *Tomomyza* in the form of the face and in the hairy metapleura; the ocelli, however, are well developed (the mistake made by Loew in 1856, in stating that the ocelli are wanting, was corrected by this author himself in 1873). The species of *Antonia* seem to mimic Hymenopterous insects such as *Vespidae* or *Crabronidae*, and are very like some species of Syrphid flies of the genera *Sphaerophoria* or *Xanthogramma*. They appear to be very rare, and authors such as Loew, Walker and Hermann who have dealt with them have never seen more than single specimens, which were invariably ♂♂. It is curious that in the collection before me there are only four specimens, all ♂♂, and all belonging to different species. Becker alone (1913) mentions the ♀, but it would appear that in his statements there is some confusion as to sex, number of abdominal segments, etc.; the new genus *Antoniaustralia*, which is certainly badly named, also seems to be not well founded.

The following additions should be made to the generic characters of *Antonia*: Eyes of ♂ separated, but closely approximate, and with enlarged facets in front and above. Metapleura hairy. Wing-membrane wrinkled. The peculiar characters of the venation were well described by Loew, especially the very long auxiliary and first longitudinal veins, and the exceedingly short, almost wanting praefurca. Ambient vein complete.

At present only two species, found respectively in the Mediterranean Subregion (Algeria, Egypt, Arabia, Sinai) and Turkestan, are known, though to these should be added Becker's species from Australia. The four species represented in the collection before me may be distinguished as follows:—

- 1 (4). Abdomen of ♂ very long and pointed, with eight distinct and well-developed segments, red or in reddish colour, black spotted and very shortly pilose, except at base; ♂ genitalia provided with long appendages.
- 2 (3). Ocellar tubercle at some distance from vertex, which shows two yellow spots; occiput not at all prominent; ♂ genitalia with two rather short appendages; first posterior cell closed, shortly stalked; middle cross-vein situate on distal fifth of discoidal cell.*suavissima*, Loew.
- 3 (2). Ocellar tubercle practically on vertex, which is devoid of yellow spots; occiput rather prominent; ♂ genitalia with two very long appendages, which curl inwards; first posterior cell open; middle cross-vein on distal eighth of discoidal cell.*cirrhatta*, sp. nov.
- 4 (1). ♂ abdomen short, obtuse, with only seven distinct segments, of a bright yellow colour with black spots, and rather long pubescent throughout; ♂ genitalia devoid of appendages; ocellar tubercle, vertex, occiput and venation as in *A. cirrhata*.
- 5 (6). Face entirely yellow; frons yellow, with two small dark spots near base; abdomen black, with a row of broad yellow spots on each side.*xanthogramma*, sp. nov.
- 6 (5). Face broadly black in middle; frons black, with two small yellow spots in front and with a yellow border on each side; abdomen yellow, with three rows of black spots.*nigrifrons*, sp. nov.



FIG. 10.—*Antonia suavissima*, Lw. ♂. × 4.

101. *Antonia suavissima*, Loew (1856).

A very elongate species, with black and yellow thorax and red abdomen, distinguishable at once from any other by its venation and the shape of the head.

The British Museum possesses a ♂ from Algeria, Hammam-es-Salahin, April, 1904 (the late *Lord Walsingham*), and a second specimen of the same sex from Abyssinia, November, 1911 (*R. J. Sturdy*). Loew described the species from Egypt, without precise locality; Walker redescribed it as *Dimorphophora* (*Dimorphophus*) *syrphoides*, from Arabia, Wâdy Gennêh; Becker records it from Syria (?); and Hermann has reported its occurrence in Sinai, Gâ'a Desert (caught by Kneucker on flowers of *Zygophyllum coccineum*, L.); it is interesting to note the coloration of the abdomen of the fly in relation to that of the flowers of the plant in question.

The appendages of the ♂ genitalia are yellow, directed vertically downwards and not longer than one-third the length of the eighth abdominal segment.

102. *Antonia cirrhata*, sp. nov.

Nearly allied to the preceding species, but distinguished by the absence of the yellow vertical spots, and by the presence of a median longitudinal series of black spots on the abdomen.

Type ♂, a single specimen from Somaliland, Bohotle, 1903 (*Vety.-Major A. F. Appleton*).

A very interesting species, forming a transition from the preceding to the following group. In genitalia, pubescence, colour, etc., it agrees with *A. suavissima*, while in form of head and of abdomen it resembles the two following species.

♂. Length of body 12.5 mm.; length of wing 10 mm.; wing-expanse 24 mm.

Head as broad as thorax, and seen from in front higher than broad. Occiput black, dark grey dusted and short yellowish tomentose, rather prominent above and on sides, but in middle deeply excavated; yellow lateral border, which in *A. suavissima* begins just before indentation in hind margin of eye, commencing in present species much below this indentation; beyond vertex a short, deep, median longitudinal furrow. Ocellar tubercle oval, with ocelli forming an equilateral triangle, situate just in front of upper angle of eyes; eyes dark purple reddish, with green reflexions; interval between eyes at narrowest point narrower than distance between posterior ocelli; from this point frons becomes gradually broader, until at level of antennae its breadth is one-fourth of that of head; frons wholly orange-yellow, and beyond middle produced to form a rounded tubercle, exhibiting proximally a median longitudinal furrow; in front of this tubercle frons is abruptly excavated to form deep furrow in which antennae are situate; hair on frons entirely yellowish, becoming a little darker and shorter on upper part and on ocellar tubercle. Antennae inserted above middle line of eyes, and placed in a deep cavity between prominent frontal tubercle and projecting face, bottom of this cavity exhibiting a black spot; first joint cup-shaped, bare above, with short yellow hairs

beneath; second joint yellow, globular with some yellow hairs above and on outer surface; third joint black, a little longer than first two joints together, broadened at base but nevertheless narrower than second joint, gradually tapering to a point with a minute style at end. Face short, prominent, broadly rounded, entirely yellow, bare in middle, with short, dense yellow hair on sides; from antennal cavity runs a deep furrow, dividing cheeks from face; jowls and chin yellow and bare. Mouth opening very narrow and long; proboscis thick and short, yellow, with black labella; in case of type, it is retracted into oral cavity, so that palpi are not visible. Dorsum of thorax deep black, dull, with a broad yellow stripe on each side, extending from humeri to scutellum; there are two broad, parallel, complete, longitudinal stripes of golden tomentum, and a third narrower one in median line between them; hair on back yellow, rather long, especially in front and on sides; praesutural and postalar bristles likewise yellow. Pleurae yellow, with black, grey-dusted spot on mesopleura, lower half of sternopleura and hypopleura; pleurae bare, except propleura, mesopleura and metapleura, which are clothed with long yellow hair. Scutellum entirely yellow, opaque, with short yellow hair, which is longer behind and on sides, and with yellow bristly hairs on hind border. Squamae yellow, with very short yellowish hair on margins; halteres entirely yellow. Abdomen long and narrow, rather flat, gradually attenuate posteriorly, consisting of eight segments of equal length; first segment entirely deep black (its exterior angles alone being yellow beneath), clothed with long yellow hair, chiefly on sides; second segment yellowish-red, with a broad triangular deep black spot, which has its base on hind border and its blunt apex in contact with fore border; third to seventh segments yellowish-red, each with an oval deep black median spot, not reaching hind border and decreasing in size from first to last; eighth segment without black spot; all segments from second to eighth with a white shining complete hind border (less distinct on last segment), and sparse, short hair, which is black behind and on sides, yellow in front and in middle; fourth, fifth and sixth tergites on each side, towards ventral surface, also with a rounded black spot, which is almost entirely concealed beneath preceding segment. Venter concealed beneath lateral extremities of tergites, which approach each other in middle line. Genitalia reddish-yellow and yellowish-pilose, provided above at base with two very long appendages, one on each side, directed downwards and curled inwards at tips. Front and middle legs with coxae entirely sulphur yellow; coxae with dense and long, femora with short and sparser yellowish hair; tibiae with short, yellow spicules; last tarsal joints, and long, robust claws black; pulvilli dark yellowish. Hind legs darker yellow; femora darkened outside and densely but shortly pubescent, with some bristly dark yellow hairs above before distal

extremities; latter blackened, like those of tibiae, which have yellow spicules; tarsi quite black. Wings narrow and long, entire surface wrinkled, greyish hyaline, with black veins, which are dark yellowish at base; venation exactly as in *A. suavisissima*, but middle cross-vein situate much nearer end of discoidal cell; first posterior cell open, but distinctly narrowed at end; base of discoidal cell more acute; anal cell more broadly open.

103. *Antonia xanthogramma*, sp. nov.

A short, rather pilose species, with a black, yellow-spotted abdomen, recalling a Syrphid of the genus *Xanthogramma*.

Type ♂, a single specimen from Natal, Willow Grange, Mooi River, 17 September, 1913 (the late *R. C. Wroughton*). The discovery of this species is very interesting, since it is the first *Antonia* known from South Africa; it is very much like the Australian *Antoniaustralia hermanni*, Becker, the alleged provenance of which is possibly open to doubt.

Head and its appendages exactly as described in case of preceding species; occipital hairs slightly but distinctly longer; eyes with strong violaceous reflexions, narrowly green only above; basal half of frons darker; frontal tubercle adorned with an elongate blackish-brown spot on each side at base; first antennal joint with upper and outer border of cup blackened; second joint also a little blackened above in middle; styliform part of third joint more abrupt and thinner; black spot at bottom of antennal cavity more distinct, hair on sides of anterior part of frons and on face more whitish than yellow; facial cone a little darker at tip; mouth opening less elongate; palpi sulphur yellow, long, curved, almost bare; labella of proboscis brown, not black. Thorax, scutellum and pleurae as in *A. cirrhata*, but clothed with more longer hair, and black pattern more extended on pleurae, even pteropleura being black; three longitudinal stripes on back grey dusted, attenuate behind and ending just beyond middle of mesonotum. Squamae whitish-yellow, with short golden hair; halteres pale yellowish. Abdomen short and obtuse, convex, distinctly narrower in middle than at end, composed of only seven segments, all of equal length; first segment deep black, with narrowly yellow posterior angles; second segment likewise deep black, with a broad yellow elongate spot on each side; third to sixth segments black, with a broad rounded yellow spot on each side, forming successively more extensive yellow hind borders to tergites, each hind border being united on sides with that of preceding segment, abdomen being thus entirely yellow on sides, with a small black spot on third, fourth and fifth segments; seventh segment yellow, with a rounded black basal spot in middle. Venter entirely yellow. Abdominal segments with long yellow pubescence, chiefly at base; third, fourth and fifth segments with a tuft of black hairs on small black spot and on sides; genitalia rounded, yellow, without

appendages, ventral in position and recalling those of genus *Sphaerophoria*. Type specimen with only a single (middle) leg, which is as in *A. cirrhata*, but has much thinner, almost indistinct, yellow spicules. Wings precisely as in *A. cirrhata*.

104. *Antonia nigrifrons*, sp. nov.

Closely allied to preceding species, but distinctly more robust and differently coloured.

Type ♂, a solitary specimen from Kenya Colony, Makindu, 16 December, 1911 (*Dr. S. L. Hinde*).

♂. Length of body 10 mm.; length of wing 8 mm.; of the wing-expanse 19 mm.

Head as in preceding species, with following colour differences: inflated portion of frons entirely black, opaque, with two small rounded yellow spots on fore border, one on each side; this black spot continued by a stripe which passes between antennae, which are wider apart, and reaches a broad black band occupying whole centre of prominent part of face. First antennal joint entirely black on upper and inner side, yellow beneath and on margin and inside cup; third joint ending in a more distinct style. Grey pattern on back of mesonotum rather different; middle stripe wanting, and lateral ones thinner and not prolonged, reaching grey patch before scutellum; yellow markings on mesopleura brighter and broader, pteropleura likewise yellow. Abdomen as in preceding species, but yellow colour predominating over black, segments from third to sixth being yellow with a broad black spot on middle of back, separated only by whitish hind borders of segments, and becoming smaller posteriorly; on each side there is besides a broad, rounded, black spot; seventh segment with dorsal spot alone. Legs in case of type partly destroyed; a fragment of hind pair shows that femora and tibiae are yellow, black-haired, but with dark yellowish bristles and spicules; femora blackened above at tips. Wings as in preceding species, but distinctly more greyish.

Genus 17. *LOMATIA*, Meigen (1822).

I deal with this genus here in its widest sense, following the precedent set up by Loew, including in it all the Ethiopian species. They are, however, very different from the European ones in coloration, and should perhaps be referred to Becker's genus *Canaria*, were it not that I am not clear as to the characters of the typical species *C. brunnipennis*, Macquart, which is unknown to me. The form of the antennae is different in the various groups; but a character in which all the Ethiopian species agree is the shape of the distal end of the discoidal cell. While in the Mediterranean species this cell is truncate at the end, with a single cross-vein, in the Ethiopian ones its distal end is acute, with two concurrent cross-veins.

The following additions should be made to the characters of the genus. Metapleura bare. Wing-membrane smooth, not wrinkled; ambient vein complete. Squamae with dense fringes, formed by many rows of hairs.

The numerous Ethiopian species of *Lomatia* can be divided into three groups according to the form of the antennae and the venation. The first, or *acutangula*-group, corresponds to Division I. A in Loew's work on the South African Dipterous Fauna; the second, or *pictipennis*-group, to Division I. B + II; and the third, or *latiuscula*-group, to Division III.

The species before me may be distinguished as follows:—

- 1 (4). Wings very narrow and long, with basal comb little developed; upper branch of cubital fork angulate at base and provided with an appendix; discoidal cell thrice as long as second posterior cell, and very acute at end; anal cell much narrowed at end; third antennal joint conical in shape and very long; frons of ♂ rather broad; praealar macrochaetae black; middle and hind femora with many spines beneath (Group I).
- 2 (3). Species of smaller size; wings with only fore border and a broad praeapical band infuscated. *acutangula*, Loew.
- 3 (2). Species of greater size; wings entirely black, only centre of cells sometimes clearer or even whitish hyaline. *neavei*, sp. nov.
- 4 (1). Wings not so narrow and not so long; upper branch of cubital fork not angulate and not provided with an appendix; discoidal cell not more than twice so long as second posterior cell, and not so acute at end; third antennal joint less elongate and not conical.
- 5 (26). Third antennal joint broad at base, and ending in a very thin and long styliform point; wings with a broad pattern, but devoid of isolated spots; discoidal cell usually twice so long as second posterior cell; basal comb of wings well developed and often rather large; praealar bristles usually yellow; middle and hind femora with many spines beneath; frons of ♂ very narrow; species of larger or medium size (Group II).
- 6 (13). Wing-pattern extending to hind border, at least in shape of a fuscous edging to veins; clear stripes present in fuscous part of wing; anal cell narrowed at end; praealar bristles always yellow; species of larger size.
- 7 (8). Legs entirely yellow; wings wholly infuscated, with whitish apex and whitish longitudinal median stripe. *longitudinalis*, Loew.
- 8 (7). Legs entirely black, or only with tibiae and base of tarsi dark yellowish.
- 9 (10). Wings broadly infuscated, but almost hyaline on hind border, with posterior veins edged with fuscous; body pubescence pale yellowish; tibiae with more or less distinct dark yellow ground-colour.
liturata, Loew.
- 10 (9). Wings yellowish at base and on fore border, with or without brown bands and brown hind border; pubescence of body bright yellow or even golden; tibiae quite black.
- 11 (12). Wings with broad praeapical brown band, and with infuscated hind border; species of smaller size. *pictipennis*, Wied.
- 12 (11). No brown praeapical band on wings, and hind border not infuscated; species of greater size. *gigantea*, Bezzi.
- 13 (6). Wing-pattern limited to fore border, not extending in middle beyond fourth longitudinal vein; if as an exception hind border be infuscated, no clear stripes in fuscous portion; anal cell usually less narrowed at end; species of medium size.
- 14 (25). Praealar bristles yellow.

- 15 (24). Face and jowls clothed with entirely yellow hairs; first antennal joint with entirely or mainly yellowish or white hairs beneath.
- 16 (17). In ♂ first basal cell hyaline with a dark base, and first submarginal cell quite hyaline; inner hairs of basal tufts on antennae black. *simplex*, Wied.
- 17 (16). First basal cell in both sexes entirely darkened as far as middle cross-vein; first submarginal cell broadly darkened at base.
- 18 (23). Proboscis as short as usual, shorter than head; frons yellowish or white-haired, but devoid of tuft of argenteous hairs.
- 19 (22). First posterior cell not or very little narrowed at end; frons clothed anteriorly with yellow or golden hairs.
- 20 (21). Frons of ♀ shining black; wings infuscated on posterior half; species of larger size. *infuscata*, Bezzi.
- 21 (20). Frons of ♀ dull black; wings almost hyaline on posterior half; species of smaller size. *inornata*, Loew.
- 22 (19). First posterior cell much narrowed at end; frons clothed with long whitish hair. *conocephala*, Macq.
- 23 (18). Proboscis longer than usual, twice as long as head; frons in middle with small tuft of argenteous hair. *punctifrons*, sp. nov.
- 24 (15). Face and jowls with black hair; first antennal joint with quite black hair beneath; proboscis short; frons with median tuft of argenteous hair. *melampogon*, Loew.
- 25 (14). Praealar bristles black and stout; frons with white hair in front; antennal tuft white, with black hairs on inner side; first basal cell wholly brown. *pulchriceps*, Loew.
- 26 (5). Third antennal joint short and conical; wings without distinct basal comb, usually hyaline and devoid of pattern, or if with pattern, with isolated dark spots; discoidal cell not much longer than second posterior cell; anal cell little narrowed at end; thorax with strong black praealar bristles, and in front with collar of usually black bristly hairs; femora unarmed or with only a few bristles; eyes of ♂ approximate. Deep black species of smaller size, and short, broad shape, with tufts of argenteous hair at sides of base of abdomen (Group III).
- 27 (28). Wings with black base and fore border extending to end of first longitudinal vein, and also with four isolated, rounded, black spots; femora unarmed. *spiloptera*, sp. nov.
- 28 (27). Wings wholly hyaline, without any pattern, only with yellowish base; hind femora with a few spines at end.
- 29 (30). Tibiae yellow; bristles of collar on fore border of thorax thin and yellow. *latiuscula*, Loew.
- 30 (29). Tibiae entirely black; bristles of collar strong and black.
- 31 (32). Pleurae with black hair; first antennal joint with entirely white hair beneath; abdomen at base with tuft of long argenteous hair on each side. *pleuralis*, Bezzi.
- 32 (31). Pleurae with white or yellowish hair; first antennal joint with white and black hair beneath.
- 33 (34). Discoidal cell relatively broad, and almost as broad at base as at end; sides of abdomen at base entirely white pilose. *tenera*, Loew.
- 34 (33). Discoidal cell distinctly more narrower, and narrower and more acute at base than at end; abdomen on sides at base with white and black hair intermingled. *mitis*, Loew.

Group 1. *L. acutangula*.

105. *Lomatia neavei*, sp. nov.

A narrow, long-winged species, nearly allied to *L. acutangula*, Loew, from which it is at once distinguished by greater size and by the wholly black wings.

Type ♂, numerous additional specimens of same sex, and

type ♀, from Nyasaland, Mt. Mlanje, October–December, 1912; the two type specimens were caught *in copula*; all collected by Dr. S. A. Neave, in whose honour this interesting species is named.

♂♀. Length of body 11–12 mm.; length of wing 14–15 mm.; wing-expanse 31–33 mm.

Occiput black, broad, prominent above and narrow beneath, deeply hollowed in middle around neck, clothed with short hairs, which are black above and greyish in middle and on sides, from indentation in hind margin of eyes downwards; median vertical furrow, beyond vertex, deep. Ocellar tubercle broad, flat, delimited behind by a shallow groove, black-haired, with ocelli disposed in an equilateral triangle. Frons black, in ♀ posteriorly rather less than twice as broad as in ♂, gently rounded, clothed with long black hairs on posterior half and along middle line to antennae; sides of frons in middle with short yellow tomentum, and anteriorly with long whitish hair, which is continuous below with that on sides of face and on jowls; chin

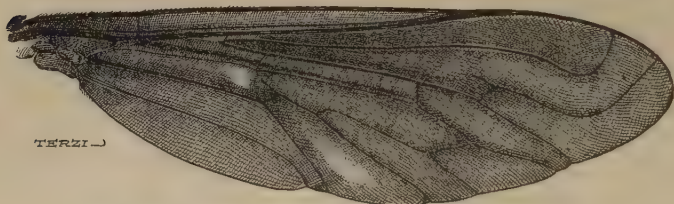


FIG. 11.—*Lomatia neavei*, sp. nov. Wing of ♂. $\times 8$.

black, clothed with short pale hairs. Antennae entirely black; first joint with black hair above, and beneath with long but not dense hair, which is entirely white in ♀ and in ♂ is interspersed with black hair; third joint about twice as long as first two joints together, as broad as second at base, and gradually tapering to a stoutish linear termination. Mouth opening long and broad; proboscis black, very thick and short, much shorter than mouth; palpi black, half as long as proboscis, thick, with short pale hairs. Thorax and scutellum black, with a golden tomentum, and clothed with yellowish hairs, with which many black ones are intermingled, chiefly on sides and in front; praealar bristles strong, black, like those on hind border of scutellum. Hair on pleurae yellowish above, whitish beneath, as on breast. Squamae yellow, with dense white fringes; halteres yellow. Abdomen long and narrow, as broad as thorax in the middle, entirely black, but in well-preserved specimens showing broad bands of golden tomentum on hind borders of all segments; long but sparse hair yellowish on base and in middle, black on sides and behind, but paler in ♀; hair on sides not specially dense; venter black, pale haired on sides. Legs entirely black, with sparse dark scales; spines black, those on tibiae long;

middle femora on anterior side with two to three, hind femora beneath with five to six spines; claws black; pulvilli blackish. Wings very long, with but little-developed black basal combs, entirely black except costal cell and posterior basal angle, including rudimentary alula, which are yellowish; in some specimens there are whitish hyaline streaks in centre of discoidal cell, and of all cells in apical half and on hind border; appendix to angle near base of upper branch of cubital fork long; first posterior cell narrowed at end, but much less than anal cell; discoidal cell thrice as long as second posterior cell; third posterior cell narrow, long, and very acute at base.

Group 2. *L. pictipennis*.

106. *Lomatia liturata*, Loew (1860).

A large or medium-sized species, characterised by the fuscous pattern of the centre of the wing extending to the hind border, at least in the shape of fuscous margination of the veins. This species seems to be by no means rare in South Africa. The British Museum possesses three rather small (10 mm. long) ♂♂ from Natal, Willow Grange, Mooi River, 9 April, 1913 (the late *R. C. Wroughton*); also, likewise from Natal, numerous specimens of both sexes from Howick (*J. P. Cregoe*); while there is a further series from the Transvaal, Pretoria, March, 1914 (*Miss J. Brincker*).

107. *Lomatia pictipennis*, Wiedemann.

Of this well-known and easily distinguishable species from South Africa, there are in the British Museum very numerous specimens from the Transvaal, Pretoria, March, 1914 (*Miss J. Brincker*); and Natal, Howick (*J. P. Cregoe*); in addition to others from the Cape Province, Zululand, Southern Rhodesia and Nyasaland.

108. *Lomatia infuscata*, Bezzi.

A species of considerable size, characterised by having an elongate abdomen with abundant black hair at the tip, while the wings are strongly infuscated, even on the posterior half. The wings are, moreover, very elongate, like those of species belonging to the first group; running through the second basal and the very elongate discoidal cell there is a clearer stripe. Of this species, which was described by me from Natal in my work on the Cape Bombyliidae, the British Museum has two ♀♀ from the Transvaal, Pretoria, 1914 (*Miss J. Brincker*).

These specimens measure 13 mm. in length, and have a wing-expanse of 30 mm.

109. *Lomatia inornata*, Loew (1854).

A medium-sized species characterised by a definite wing-pattern, by a first posterior cell not constricted at the tip, and

by the presence of golden-yellow hairs on the fore part of the frons. The present species is not to be confounded with the other *L. inornata*, described in 1860 by the same author, the name of which was changed by me in 1912 to *L. loewii*.

The species with which we are dealing was described originally from Nubia, and I have recorded it with doubt from N. Nyasa; there are in the British Museum two ♀♀ from Abyssinia, November, 1911 (*R. J. Stordy*). The identity of a badly preserved ♂ from the same locality is very doubtful.

In the present species the basal comb of the wings is small; the middle femora have two, the hind femora from two to three spines.

110. *Lomatia conocephala*, Macquart (1840).

Easily distinguishable from the other species of this group by the first posterior cell being narrowed at the tip. The species was unrecognisably described from the Cape by Macquart, who mistook it for an *Anthrax*; I therefore redescribed the species in my work on the Bombyliidae of the South African Museum, basing my interpretation on the original figure of the wing. The British Museum possesses two ♂♂ from the Transvaal, near Johannesburg, 1906 (*A. J. Chalmley*).

111. *Lomatia punctifrons*, sp. nov.

A medium-sized species, closely allied to the following, but distinguished by the facial hair being yellow instead of black, and also differentiated from any other species here recorded by its long proboscis.

Type ♂ and type ♀ from Nyasaland, Mt. Mlanje, January, 1913 (*Dr. S. A. Neave*); other specimens from Mt. Mlanje and Blantyre, January–February, 1914 (*Dr. J. B. Davey*). Were it not for the difference in the length of the proboscis, I should be inclined to think that what is here regarded as a species is only a colour variety of *L. melampogon*, Loew.

♂♀. Length of body 8 mm.; length of wing 9 mm.

Occiput black, somewhat shining, with short black hair above, and golden yellow tomentum on sides below indentation in hind margin of eyes, more developed in ♀; postvertical furrow little developed. Ocellar tubercle dull black, broad, flat, black-haired, without posterior groove. Frons in ♂ black, dull, at narrowest point narrower than distance between two posterior ocelli; frons clothed with erect black hair, but in middle of broad, triangular part with a conspicuous rounded spot formed by argenteous hair. Frons of ♀ shining black, thrice as broad as that of ♂, clothed with black hair, which becomes yellow in front, and above base of antennae with a broad band of white hair, divided in middle line by bare space over antennae. Face and jowls black, clothed on sides with a single row of stiff yellowish hairs; chin black, grey dusted, with very short whitish pubes-

cence. Antennae entirely black; first joint black-haired above in both sexes, beneath in ♂ with black rigid hairs, with only a few white ones intermingled on sides—in ♀ with entirely pale yellowish hairs; third joint expanded first at base, then abruptly constricted to form a long styliform point, which is longer and yellowish towards tip in ♂. Proboscis black, more than twice so long as head; palpi black, clavate, with long whitish hair. Thorax and scutellum deep black, with golden yellow pubescence and thin yellowish bristles; pleurae grey dusted, with golden hair even on breast, a little paler in ♀. Squamae pale yellowish, with brown borders and dense golden fringe; halteres yellow. Abdomen short and broad, entirely deep black, with bands of golden tomentum on hind borders of segments, and clothed with hair like that on thorax or only a little paler; last segments alone have a few black hairs on sides. Venter black, grey dusted, golden tomentose and yellow-haired. Legs quite black, with black spines, pale yellowish scales, and long yellowish hair on coxae and under side of femora; middle femora with one, hind femora with two spines; claws black; pulvilli dark brown. Wings long, with a small black comb at base; brownish-yellow pattern complete and typical, but in ♂ first submarginal cell is almost entirely hyaline as far as base; veins black, yellowish towards base; upper branch of cubital fork very long, but gently curved; first posterior cell not or but slightly narrowed at tip; discoidal cell less than twice as long as broad second posterior cell; anal cell very broadly open.

112. *Lomatia melampogon*, Loew (1860).

Very distinct from any other species on account of the entirely black hair on the sides of the face and on the jowls.

Loew described the ♂ from Caffraria; there is in the British Museum a single ♂ specimen from Nyasaland, Mt. Mlanje, 13 March, 1913 (*Dr. S. A. Neave*). I refer this individual with doubt to Loew's species, in view of certain discrepancies, as (a) in the frons, which has an argenteous median spot, as in *L. punctifrons*; and (b) in the praealar bristles, which are yellow, not black as described by Loew. The description of the preceding species may be applied to the present one, except as regards the following details: (1) the first antennal joint has black hair beneath with only one or two white hairs intermingled; (2) the rigid hairs on the sides of face and on the jowls are all black; (3) the proboscis is only of ordinary length, being shorter than the head; (4) the black hairs at the tip of the abdomen are very abundant, forming black tufts on the sides of the last two segments. It is very probable that the as yet unknown ♀ of the present species has yellow hairs on the face; but the short proboscis will at any rate distinguish it from *L. punctifrons*. One ♂ in the British Museum from the Transvaal, Pretoria, 1914 (*Miss J. Brincker*), and another from Kenya

Colony, Masai Reserve, 22 April, 1913 (*T. J. Anderson*) have black praealar bristles, as described by Loew, and have the argenteous frontal spot less distinct.

113. *Lomatia pulchriceps*, Loew (1860).

A rather small species, distinguished from the others of the present group by its strong black praealar bristles. *L. pulchriceps*, which was originally described from the Cape, seems to be not uncommon in South Africa. There are in the British Museum specimens from Natal, Howick (*J. P. Cregoe*); and Willow Grange, Mooi River, 30 March–20 April, 1913 (the late *R. C. Wroughton*); and from the Transvaal, Pretoria, March, 1914 (*Miss J. Brincker*).

Proboscis short; middle and hind femora with two to three spines; wings without distinct basal comb, and with broadly open anal cell.

The present species, in view of its small size, *Thyridanthrax*-like facies, black macrochaetae and venational characters, is to be considered as forming a connecting link between the present and the following group; but it has the typical wing-pattern (*Doppelschweif* of Loew) of the second group, and has no collar of black bristles in front of the thorax.

Group 3. *L. latiuscula*.

114. *Lomatia spiloptera*, sp. nov.

A small-sized, pretty species, which differs from any of its congeners at present known owing to its very peculiar wing-pattern.

Type ♂, and an additional specimen of same sex from Nyasaland, Mt. Mlanje, 11 December, 1912 (another of the interesting discoveries of *Dr. S. A. Neave*); there is a third ♂ with less-developed wing-pattern, and with quite black-haired face, from Belgian Congo, S.-E. Katanga, 24 February, 1907, 4,000 ft. (*Dr. S. A. Neave*). The species shows all the characters of the present group, differing only in the presence of a wing-pattern.

♂. Length of body 5·5·2 mm.; length of wing 6·6·2 mm.

Occiput deep black above, grey dusted beneath, with short black pubescence above, pale short hairs on borders of central depression, and white tomentum near the eye-indentation; postvertical furrow faintly indicated. Eyes large, with upper facets only a little enlarged; eyes closely approximate above, distance between them at narrowest point being not greater than breadth of anterior, ocellus. Ocellar tubercle elongate, with no groove behind, and with some long black hairs. Frons black, dull, grey dusted, resembling a broad, elongate triangle; it is clothed with short, erect, black hairs, except that above antennae are some scattered white hairs, which do not form a

distinct band or spot; bare space above antennae broad, exhibiting an oval furrow in middle. Face and jowls black, grey dusted, with white hair on sides; chin with very short whitish pubescence. Antennae entirely black; first joint short and broad, with short black hairs above, and with longer ones, partly black, partly white, below; third joint broad at base and inflated below, gradually tapering to a short conical point; terminal style very minute. Mouth opening broad and long; proboscis black, very thick, much shorter than head, with short, broad labella; palpi not visible. Thorax velvety black, with a pair of very strong, black praealar bristles on each side, and a distinct collar of black bristles on fore border; it is clothed with white, soft, long hair, sparse on disc, longer and dense on sides, and on grey dusted pleurae. Scutellum like thorax, devoid of distinct bristles on hind border. Squamae blackish, with a dense white fringe; halteres with dark stalks, and pale yellowish knobs. Abdomen elongate, as broad as thorax, velvety black, almost bare in middle, with long, snow-white hair on sides, and with tufts of black hair on sides of last four segments. Venter black, with white hair. Legs quite black, with white scales, white hair on coxae and on under side of femora, with small black spicules on tibiae, and without spines on under surface of femora; claws black, pulvilli dark. Wings destitute of basal comb, and with a blackish, not yellow-spotted base; blackish pattern extending from end of first vein to middle cross-vein, and thence along fourth vein to base, discoidal cell being almost entirely hyaline, while second basal cell is almost entirely infuscated; four broad, rounded, isolated, blackish spots all of equal size, and situate on cross-veins at base of fourth, inner base of third, base of second posterior cell, and on base of second submarginal cell. Second longitudinal vein strongly looped at tip; upper branch of cubital fork very long and angularly bent at base; first posterior cell broad, not narrowed at tip; discoidal cell one and a half times so long as second posterior cell; anal cell broadly open at end; axillary lobe broader than in allied species. Discoidal cell more obtuse at end than usual, its apical cross-vein being less oblique; three dark spots on lower border of discoidal cell sometimes united with dark fore border of wing; a brown band in middle of discoidal cell, which therefore seems to be brown with two hyaline spots.

Genus 18. **APHOEBANTUS**, Loew (1872).

This Nearctic genus, which includes a large number of species, is represented in the Mediterranean fauna by only two species, *A. scutellatus*, Meigen, from Spain and Portugal, and *A. escheri*, Bezzi, from Algeria. It is therefore very interesting to find that there is in the Ethiopian Region a third closely allied species from Abyssinia.

115. *Aphoebantus bilobatus*, sp. nov.

A small species, readily recognisable by its bilobate, shining black scutellum, yellow tibiae, distinct pulvilli, and unspotted wings.

Type ♀, and two less well-preserved specimens of same sex from Abyssinia, November, 1911 (*R. J. Stordy*).

♀. Length of body 6-6.5 mm.; length of wing 6.5-7 mm.

Entirely black, dark grey dusted. Occiput above with short black pubescence, with scaly greyish tomentum near indentation in eyes and beneath, and with short pale pubescence in middle, around borders of central cavity of neck; postvertical furrow strongly developed, so that occiput is nearly bilobate above. Ocellar tubercle small, black, clothed with black hairs, with three distinct ocelli. Eyes with facets of equal size, with broad indentation, and with distinct bisecting line. Frons at narrowest point twice as broad as ocellar tubercle, and about one-third of head at level of antennae; it is entirely clothed with black, erect hairs, and has a little yellowish or greyish, scaly tomentum. Face black, grey dusted, with short hairs above and on sides and with longer ones beneath, which form a kind of mystax and are black with some pale yellowish or whitish ones intermingled; peristoma very narrow, bare; chin broad, black, grey dusted, with short pale hairs. Antennae wide apart at base, black, short; first two joints short and globular, sparsely clothed with black hairs above and yellowish ones below; third joint globular at base, suddenly narrowed to form a long styliform point, which ends in a well-developed biarticulate style; the entire third joint more than twice as long as first two joints together, and curved upwards at tip. Proboscis very thick and short, with broad, fleshy, pale-haired labella; palpi black, club-shaped and apparently one-jointed. Thorax broad, black with dark olive-coloured dust, and with three inconspicuous, darker longitudinal stripes, thinly clothed with long, erect, black hairs, and on sides with pale yellowish pubescence; notopleural macrochaetae numerous and black, supra-alar ones yellow, postalar black; pleurae with pale grey dust, and with tufts of pale yellowish hairs on propleura and mesopleura; metapleura quite bare. Scutellum broad, strongly developed, black, dark grey dusted, its posterior half shining black, divided into two prominent lobes by a deep median furrow, filled with short, whitish, scale-like hairs; scutellar bristles numerous, black and long, situate on shining lobes, and arranged in many (at least three) rows. Squamae dirty whitish, with short white fringes; halteres yellow, with darker knobs. Abdomen as broad as thorax, but not longer; black, dark grey dusted, with pale yellowish, scaly tomentum, and clothed with very long, erect, black, bristly hairs, arranged in a double row on hind borders of segments; anal tuft dense, yellow, sericeous; venter grey dusted, with long

white hairs. Coxae and femora black, whitish scaled and white pilose; middle femora anteriorly in middle, and hind femora beneath at tip, each with two long, strong yellow spines; all tibiae pale yellowish, with long yellow spicules; tarsi and claws black with yellow bases; pulvilli whitish, well developed. Wings narrow and long, greyish hyaline, unspotted or only with middle cross-vein very faintly infuscated; veins brown, but broadly yellow at base, costa shortly black ciliated at base, with basal hook yellow; alula pale yellowish, rounded. Second longitudinal vein with a kink and broadly looped at end; upper branch of cubital fork angularly bent at base, and there provided with a short recurrent appendix; discoidal cell obtuse at end, twice as long as second posterior cell, with middle cross-vein placed a little before its middle; first posterior cell long, only a little narrowed at end; anal cell narrowed at end, but not closed; ambient vein complete; axillary lobe long and narrow.

Genus 19. **PETROROSSIA**, Bezzi (1908).

As stated by me at time of its foundation, and as recognised more recently by Becker in his paper on the classification of the Bombyliidae, this genus is closely allied to the preceding; it has nothing to do with *Anthrax*, with which it was united by Dr. Sack in his monograph of the *Spongostylinae*.

To the generic characters should be added: wing-membrane wrinkled; ambient vein complete; metapleura bare.

The genus is well represented in the Mediterranean Region, and it may be mentioned that *Lomatia appendiculata*, Macquart (1849), from Algeria, and *Anthrax stenogastra*, A. Costa (1884), from Sardinia, belong to it; it is likewise plentiful in the Ethiopian Region, and is also found in the Oriental Region, *Anthrax fulvula* of Wiedemann undoubtedly belonging to it.

In my paper of 1912, in the *Transactions of the Entomological Society of London* (p. 615), I gave a diagnostic table of the Ethiopian species; this may be modified as follows for the reception of the new forms described below:—

- 1 (10). Terminal style of third antennal joint distinctly hairy; thorax, scutellum and abdomen devoid of golden tomentum; abdomen black, more or less broadly pale yellow, with hair on sides of first segment yellowish or whitish; frons and occiput entirely dull; legs pale yellow, sometimes partly black; wings in ♀ not particoloured.
- 2 (7). Wings usually entirely hyaline; if some times more or less infuscated at base, infuscation is irregular, never forming a definite pattern.
- 3 (6). Frons clothed with black hairs; abdomen entirely black, or reddish only on sides; wings with dark veins, second longitudinal being straight or nearly so before its terminal loop.
- 4 (5). First antennal joint black-haired; face with yellowish hairs; abdomen black, only on sides at base narrowly red; femora mostly black; upper branch of cubital fork very often provided with a recurrent appendix. *hesperus*, Rossi.
- 5 (4). First antennal joint entirely white-haired; face white-haired; abdomen black, with a complete red stripe on each side; femora

- mostly yellow; upper branch of cubital fork usually devoid of recurrent appendix.....var. *tropicalis*, var. nov.
- 6 (3). Smaller species, with frons entirely white-haired; abdomen usually entirely reddish, rarely infuscated on back; wings hyaline, with pale yellowish veins, and no appendix to upper branch of cubital fork; second longitudinal vein strongly arched upwards before loop; first antennal joint white-haired beneath.*letho*, Wied.
- 7 (2). Wings with definite pattern, either on fore border alone, or on whole surface.
- 8 (9). Face and first antennal joint clothed entirely with black hairs; wings hyaline, with blackish costal stripe; second longitudinal vein at end looped as usual.*fuscicosta*, sp. nov.
- 9 (8). Face with pale yellowish hairs; first antennal joint with a few pale hairs among black ones; wings entirely blackish, but with hyaline spots in centre of certain cells; second longitudinal vein deeply looped at end.*vinula*, Bezzi.
- 10 (1). Terminal style of third antennal joint with indistinct hairs at end; thorax, scutellum and abdomen with golden tomentum; abdomen bright orange, with or without black stripe, and with orange-yellow hairs on sides of first segment; frons and occiput in part shining or velvety black; legs orange-yellow; wings in ♀ particoloured.
- 11 (12). Pleurae with white hairs; face likewise with white hairs; abdomen with a broad black median stripe; wings of ♂ hyaline, with dark costal border; second longitudinal vein looped at end as usual; upper branch of cubital fork angularly bent at base, and provided with a recurrent appendix; discoidal cell broad, fourth longitudinal vein being bent forwards beyond middle cross-vein.*fulvipes*, Loew.
- 12 (11). Pleurae with golden yellow hairs; face with dark or yellowish hairs; abdomen entirely yellow, without black stripe, or only darkened at tip; wings in ♂ with faint uniform infuscation; second vein with shallower loop at end; upper branch of cubital fork as a rule not angulate at base, and usually without appendix; discoidal cell narrow, fourth longitudinal vein being quite straight beyond middle cross-vein.

gratiosa, Bezzi.

116. *Petrorossia hesperus*, Rossi (1790),
var. *tropicalis*, var. nov.

Ethiopian examples of this Mediterranean species appear to agree in certain characters, which may be utilised for the definition of a peculiar subspecies. In size, and in variations in the colour of the wings from hyaline to fuscous, these specimens agree with the typical form, but they differ in the characters indicated in the table printed above; they also show a tendency to lose the recurrent appendix to the upper branch of the cubital fork, which in the typical form is rather constant. The femora are quite yellow in the ♀, while in the ♂ they are often more or less blackened at the base, at least in the case of the front pair.

The British Museum possesses two ♀♀ from the Nyasaland Protectorate, April-May, 1908 (the late *Capt. H. Hardy*); the specimen from N. Nyasa previously referred to by me (*Trans. Ent. Soc. London*, 1912, p. 615) also belongs here; a ♀ of larger size with infuscated wings, from N. Nigeria, Kateri, 1 December, 1910 (*Dr. J. J. Simpson*), is referred to this species with some doubt. There are also:—a ♂ from N.-W. Rhodesia, Chilanga, 5 September, 1913, "on sandy path" (*R. C. Wood*); another

♂ from S. Nigeria, Ibadan, 27 November, 1913 (*Dr. W. A. Lamborn*); and a ♀ from N. Nigeria, Zungeru, 28 March, 1911 (*Dr. J. W. Scott Macfie*). A ♀ from Gambia, Ballangar, 13 March, 1911 (*Dr. J. J. Simpson*), has broadly infuscated wings, white pubescent frons, and a tuft of white hair at the tip of the abdomen; this, like the above-mentioned specimen from Kateri, should perhaps be assigned to a distinct species.

117. *Petrorossia letho*, Wiedemann (1828).

Near the preceding species, but smaller and distinguished by a white-haired frons, usually entirely reddish abdomen in the ♂, and hyaline wings, which have pale yellowish veins.

A ♀ specimen from Kenya Colony (*R. J. Stordy*), has the abdomen reddish only on the sides. The species has already been recorded from N. Nyasa, and I have seen numerous specimens of it taken at Assab, Erythraea. One ♂ in the British Museum, from the Anglo-Egyptian Sudan (*H. H. King*), has the abdomen red only on the sides, and the femora broadly black at the base; a ♀ from N. Nigeria, Zungeru, 25 February, 1911 (*Dr. J. W. Scott Macfie*) has the legs entirely yellow, but the abdomen red only on the sides.

118. *Petrorossia fuscicosta*, sp. nov.

A very interesting species closely allied to *P. hesperus*, but differing in having the head clothed entirely with black hair, and in the presence of a blackish stripe on the fore border of the wings.

Type ♂, and an additional specimen of the same sex, from Abyssinia, November, 1911 (*R. J. Stordy*).

♂. Length of body 7-8.5 mm.; length of wing 7-8.5 mm.

Head as in *P. hesperus*, but with frons distinctly a little broader; hair on frons, face and first antennal joint without exception entirely black. Thorax and scutellum entirely black, clothed with pale yellowish hair; pleurae with whitish hair on propleura, mesopleura and sternopleura; bristles yellow; squamae dirty yellowish, with pale fringes; halteres yellow, with whitish knobs. Abdomen black, broadly red on sides, clothed with pale yellowish hair, venter entirely reddish, with black base and with white hair; genitalia red. Coxae black, yellowish-haired; femora black, with yellow tips; tibiae and tarsi yellow. Wings hyaline, blackish-brown stripe on fore border extending distally to end of first longitudinal vein, and below to fourth vein as far as end of first basal cell, and afterwards only to second longitudinal vein; base of second basal cell and extreme base of anal cell also infuscated; cross-vein at base of fourth posterior cell likewise slightly infuscated. Veins dark, with yellowish base; second longitudinal vein originating at two-thirds of distance between base of third vein and middle cross-vein, looped as usual at end; upper branch of cubital fork gently curved at base, and devoid of appendix, or only with a very rudimentary one;

middle cross-vein situate on first third of discoidal cell, which is broad at end, fourth vein being curved upwards beyond middle cross-vein; first posterior cell slightly narrowed at end. Axillary lobe broad; ambient vein complete.

119. *Petrorossia fulvipes*, Loew (1860).

A pretty species, characterised by its orange-yellow abdomen and legs, by the golden tomentum on the body, and by the particoloured wings of the ♀. This species is widely distributed throughout the Ethiopian Region, from the West to the East Coast, and from the centre to the extreme south. It is closely allied to the Oriental *P. fulvula*, Wied., which ranges from Ceylon to the Philippine and Aru Islands, and is distinguished by having yellow hair on the pleurae, less extensive red colour in the abdomen, and less distinctly particoloured wings in the ♀.

The British Museum possesses a ♂ of *P. fulvipes* from Malvern, Natal, March, 1897 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*); a ♀ from Bo, Sierra Leone Protectorate, April-May, 1910 (*Dr. H. E. Arbuckle*); a ♀ from Port Natal (*Gueinzius*); one from Nyasaland Protectorate, Fort Johnston, 1,500 ft., 5 May, 1906 (*E. L. Rhoades*); and a third from Kenya Colony, Uchweni Forest, near Witu, 25-27 February, 1912 (*Dr. S. A. Neave*). The following were presented by the Imperial Bureau of Entomology: a pair *in coitu* and some additional specimens from Nyasaland, Mt. Mlanje, November, 1912 (*Dr. S. A. Neave*), with others from same locality (*Dr. J. B. Davey*); a ♂ from Kenya Colony (*R. J. Stordy*); two ♂♂ from N. Nigeria, Zungeru, 5 May, 1911 (*Dr. J. W. Scott Macfie*); a ♀ from Sierra Leone, Kamag-Bonse, 6 April, 1912 (*Dr. J. J. Simpson*); a ♀ from N.-W. Rhodesia, Chilanga, 15 December, 1913, "on damp ground" (*R. C. Wood*); and lastly a specimen from Natal, Wentworth near Durban, 4 January, 1914 (*L. Bevis*).

The as yet undescribed ♀ is very different from the ♂, and of very distinctive appearance on account of its peculiar wing-pattern. The frons is twice as broad as in the ♂, shining black and clothed with short black hairs; above the antennae, however, there are some yellow hairs in the middle, while there is also a white dust on the front part; the frons has a median furrow on the posterior half; the occiput is shining black. The wings are distinctly broader than those of the ♂, and are similarly infuscated in the two basal thirds; this infuscation terminates on a line connecting the end of the auxiliary vein with the end of the fifth vein, but not passing beyond the end of the discoidal cell, though the tip of the latter is often quite hyaline. The pleurae are white-haired as in the ♂, with only a tuft of yellow hairs on the upper posterior angle of the mesopleura.

The present species seems to be somewhat variable as regards its wing-pattern. A ♂ from Florence Bay in the British Museum (mentioned by me in 1912) has the basal half of the wings infus-

cated as in the ♀, the dividing line passing over the discoidal cell; in this ♂ the hairs on the fore half of the frons are yellow, and the tuft on the mesopleura is white, not yellow. The ♀ from Chilanga has the infuscation of the wings very faint and almost confined to the fore border, the hind border of the discoidal cell being nearly hyaline.

120. *Petrorossia gratiosa*, Bezzi (1912).

Closely allied to the preceding species but smaller, and distinguished by the details of colour and venation given in the table printed above. The length of the body varies between 5 and 8 mm.

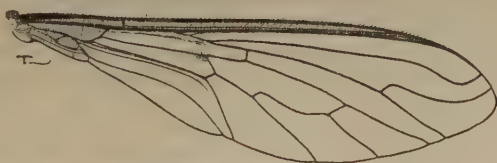


FIG. 12.—*Petrorossia gratiosa*, Bezzi. Wing of ♂. $\times 8$.

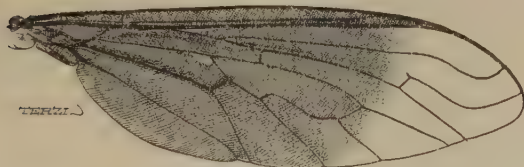


FIG. 13.—*Petrorossia gratiosa*, Bezzi. Wing of ♀. $\times 8$.

There are in the British Museum (presented by the Imperial Bureau of Entomology): a ♂ from S. Nigeria, Agege, "on flowers," 9 April, 1911 (*Dr. A. Connal*); another from the Gold Coast, Aburi (*W. H. Patterson*); some ♂♂ and a ♀ from Ashanti, Obuasi, Eduadin and Fomena, November, 1907–January, 1908, "caught hovering" (*Dr. W. M. Graham*); and a ♀ from S. Nigeria, Odut, May, 1906 (*G. C. Dudgeon*). This pretty species seems therefore to be confined to the West Coast.

The as yet undescribed ♀ is very like that of *P. fulvipes*, and it is important to note that the peculiar venational characters of the ♂ are less conspicuous in the former sex; thus the second longitudinal vein is more deeply looped at the end, and the upper branch of the cubital fork is bent at an angle, and sometimes even bears an appendix. But the ♀ of the present species is always distinguishable from that of *P. fulvipes* by the yellow hair on the pleurae, and by the infuscation of the wings being more intense and more extensive, reaching typically the base of the cubital fork, and thus passing beyond the end of the dis-

coidal cell. The abdomen is blackened in the middle above, as in the ♀ of *P. fulvipes*.

Genus 20. **CHIONAMOEBA**, Sack (1909).

This genus was described by Dr. Sack as belonging to the *Anthracinae* (*Spongostylinae*), notwithstanding the different form of its antenna; but Becker, who treats it as a section of *Anthrax* s. l., has demonstrated its affinity with *Petrorossia*.

The genus *Chionamoeba* belongs undoubtedly to the *Lomatiinae*, and is closely allied to *Petrorossia*, from which it may at once be distinguished by its wings. These are indeed much broader; the second longitudinal vein originates very near the middle cross-vein, at a distance which is often equal to or even less than the length of the cross-vein itself (in *Petrorossia* the origin of the second longitudinal vein is usually in the middle of the space between the origin of the third vein and the middle cross-vein); the discoidal cell is much shorter and proportionally broader, being as long as or a little longer than the second posterior cell (in *Petrorossia* it is about twice as long). Moreover, the head and frons appear to be broader than in *Petrorossia*.

The genus *Chionamoeba* includes the typical species *Ch. nivea*, Rossi, and *Ch. lioyi*, Griffini, as well as probably *Ch. sabulonis*, Becker; *Ch. semirufa*, Sack, as shown by Becker, is really a true *Anthrax*. In the Ethiopian Region the following species occurs.

121. *Chionamoeba frontalis*, Wiedemann (1828).

Described by Wiedemann from Nubia as a *Mulio*, and recorded with doubt by Becker in his monograph of that genus; but as Sack has stated (p. 544, note) that the type has indented and bisected eyes, the species may be referred with certainty to the present genus. There are in the British Museum (presented by the Imperial Bureau) three badly preserved ♀♀ from Abyssinia, November, 1911 (*R. J. Stordy*). These specimens, like those described by Becker and contrary to the description of Wiedemann have the femora for the most part black.

Genus 21. **CHIASMELLA**, gen. nov.

This new genus has the venation of *Chionamoeba*, and the prominent face and non-penicillate antennae of *Plesiocera* or of *Stomylomyia* (= *Tomomyza*, auct., nec Wied.); but it is distinguished from these, and from any other genus of the *Lomatiinae* by the origin of the second longitudinal vein being coincident with the middle cross-vein. This character would seem to point to affinity between the new genus and the *Exoprosopinae*, from which, however, it is separated by the abdomen being cylindrical, and by the squamae and alula being fringed with hair instead of scales. At any rate the genus forms a connecting

link between *Lomatiinae* and *Exoprosopinae*; the name has reference to the crossing of veins at the origin of the second longitudinal.

Head globular, a little broader than thorax. Occiput only moderately prominent, with postvertical furrow flat; ocellar tubercle very small but very prominent, with three distinct and closely approximate ocelli. Eyes bare, oval, with upper facets in ♂ distinctly enlarged; indentation in hind border well developed, broad and flat in ♀, more acute and deeper in ♂; latter shows also beginning of a bisecting line, wanting in ♀; eyes separated in both sexes, frons of ♀ twice as broad as that of ♂. Antennae inserted at level of middle of eyes, short and rather near together at base; first and second joints very short, third joint shortly conical, with a minute terminal style, which is quite bare. Face short and shortly pilose, rather prominent at mouth edge; mouth opening narrow and long; proboscis as long as head; palpi very short, thick, one-jointed. Thorax and scutellum with distinct bristles on sides and on hind border; metapleura with short curled hairs in ♂, almost bare in ♀. Squamae well developed, with short hairy fringe. Abdomen cylindrical, much narrower than thorax in both sexes, but with broad base; no bristles on hind borders of segments; ♂ genitalia acute, asymmetrically placed. Legs short; femora beneath with feebly developed spines; tibiae with short spicules, with but a single spur at end of hind pair, and with two spurs on middle pair; tarsi very short; pulvilli very small. Wings short and broad, with well-developed, rounded, ciliated alula; costa not ciliate at base. Second longitudinal vein short, originating opposite middle cross-vein, looped at end; cubital fork broad, with upper branch widely divergent from main stem at base, then abruptly bent but not sharply angulate and without appendix; only two submarginal cells; middle cross-vein short and situate before middle of discoidal cell, which is very broad, proportionally short, with veins forming its anterior and posterior boundaries curved, and apical cross-vein rather short; four open posterior cells present, first not or very little narrowed at tip, and third rather short; second basal cell strongly developed, approximately equal to discoidal cell in length and breadth; anal cell open, but narrowed at end; axillary lobe broad and short; ambient vein complete. Wing-membrane smooth, not at all wrinkled. Genotype: the following new species.

122. *Chiasmella brevipennis*, sp. nov.

A blackish-grey, white-scaled and white-haired, narrow and elongate species, with vitreous, iridescent, yellow-veined wings.

Type ♂ and type ♀, *in coitú*, Arabia, Sheikh Othman, near Aden, 24 February, 1895 (*Lt.-Col. J. W. Yerbury*).

♂♀. Head black, dark grey dusted; occiput with short, pale yellowish pubescence in middle, and with whitish scaly tomentum

on sides, chiefly near eye-indentation; ocellar tubercle black, pale-haired; frons with erect, pale yellowish hair, and whitish scaly toment on anterior half; face black, grey dusted, rather shining, with short, sparse pale hairs; mouth borders yellow. Antennae with first and second joints black in ♂ and clothed with short pale hairs, and in ♀ yellow and almost bare; third joint black in both sexes. Proboscis black; palpi dark yellowish, pale-haired; chin very little developed, almost bare. Thorax and scutellum black, with whitish or yellowish scaly pubescence; hairs on front part abundant, pale yellowish or whitish; praealar, supra-alar and postalar bristles, and those on hind border of scutellum, pale yellowish; pleurae grey dusted, with white hair. Squamae white, with white fringe; halteres pale yellow. Abdomen black, grey dusted, densely clothed with white scaly pubescence, forming very broad bands on hind borders of segments, especially in ♂, abdomen of which may even be called entirely white, with exception of black base and two black median spots at base of third and fourth segments; abdomen entirely clothed with dense, long, soft white hairs, more developed in ♂ than in ♀. Genitalia in both sexes pale yellow, white-haired. Venter white-scaled and densely white-haired. Legs with dense white scales; ground-colour black on coxae and on femora, which are yellow at tip and even on anterior side in ♀; tibiae and base of tarsi yellow, but hind tibiae at tip and whole of hind tarsi blackened; spines and spicules black; hind femora with four to five short spines beneath; claws yellow, with black tips; small pulvilli whitish. Wings entirely hyaline, very iridescent, with pale yellow veins; subcostal cell pale yellowish; base of costa white-scaled; alula with short white hairs on border.

Subfamily VIII. *ANTHRACINAE*.

Genus 22. *ANTHRAX*, Scopoli (1763).*

The present genus, as here restricted, differs from the following one in the shape of the third antennal joint, in the abdomen being black with a silvery tip, and in the different coloration of the wings, which also have the upper branch of the cubital fork much more sinuate.

The species belonging to this genus are very difficult to distinguish, because the wing-pattern is subject to great variability, chiefly in the extension of the black basal part and in the number of the isolated dark spots. Moreover, other important characters appear to be subject to variation in the same species, *e. g.* the colour of the plumula; the open or closed state of the anal cell; and the shape of the bend in, or the presence of supernumerary veinlets or stumps on, the upper branch of the cubital fork.

* This is not the *Anthrax* of authors, which belongs to the *Exoprosopinae*, but corresponds to *Argyramoeba* (*sens. lat.*) of authors, or to *Satyramoeba*, *Leucamoeba* and *Chalcamoeba* of Prof. Sack's monograph.

Another difficulty is connected with the fact that apparently some species are common to the Ethiopian and Oriental Regions.

The Ethiopian species may be divided into three groups, namely: (a) the first or spotted-winged group, represented by the very peculiar species *A. pithecius*; (b) the second or sub-spotted-winged group, which seems to be exclusively African, and is represented by *A. hessii* and *A. diffusus*; and (c) the third group, with wings half black, half hyaline, which is common to Asia, Africa and Europe, and is the *A. aygulus*-*A. distigma* group. It is in this last group that authors have described a great many "species," mostly, if not exclusively, based on the wing-pattern; but transitional forms obviously exist, and therefore these so-called species may be considered as belonging to a single complex. In order to give an idea of the difficulties confronting the systematist, the names of the forms described by authors in this group are shown in the following table.

Characters employed.	Oriental Region.	Mediterranean or Ethiopian Region.
1. Largest size (length 14-15 mm.); first basal cell black; anal cell with only apex not infuscated; wings with two isolated black spots.	<i>aygulus</i> , F.	<i>aygulus</i> , F.
2. Large size (length 13-14 mm.); first basal cell black; anal cell broadly hyaline at end; wings without isolated spots.	<i>emarginatus</i> , Macq.	
3. Medium size (length 7-10 mm.); first basal cell entirely black; anal cell with only apex hyaline; wings without isolated spots.	<i>melania</i> , v. d. Wulp.	
4. As in 3, but with anal cell broadly hyaline at end.	<i>emittens</i> , Walk.	<i>hemimelas</i> , Speis.
	<i>emissus</i> , Walk.	<i>homogeneous</i> , Bezzi.
	<i>carbo</i> , Rond.	<i>massinissa</i> , Wied.
	<i>fallax</i> , de Meij.	<i>camptocladius</i> , Bezzi.
5. Medium size (length 7-10 mm.); first basal cell with a hyaline spot at end; anal cell broadly hyaline; wings without isolated spots.	<i>appendiculatus</i> , Big.	<i>trifasciatus</i> , Meig.
		<i>muscarius</i> , Klug.
		<i>fuscipennis</i> , Ric.
		<i>dentatus</i> , Beck.
		<i>heteropygus</i> , Sack.
6. Medium size (length 8-10 mm.); first basal cell hyaline at end; anal cell broadly hyaline; wings with two isolated spots.	<i>distigma</i> , Wied.	<i>leucogaster</i> , Meig.
	<i>bimacula</i> , Walk.	<i>volitans</i> , Wied.
	<i>semiscitus</i> , Walk.	<i>pusillus</i> , Wied.
	<i>argyropygus</i> , Dol.	<i>biflexus</i> , Loew.
7. As in 6, but with three isolated spots on wings.	<i>trimaculatus</i> , v. d. Wulp.	<i>varius</i> , F.
		<i>trimaculatus</i> , v. d. Wulp.
8. As in 7, but first basal cell entirely black.	<i>tripunctatus</i> , v. d. Wulp.	

There are evidently more names in the books than true species in nature! However, without making a comparative study of these two series of "species," and without knowing something of their metamorphoses and bionomics, it is quite impossible to come to a definite decision as to these forms. In general it seems that the Oriental forms have a tendency to maintain very long recurrent veinlets, while the Ethiopian are inclined to shorten or even to lose these stumps.

On the basis of what has been set forth above, I divide the Ethiopian forms known to me as follows:—

- 1 (2). Second longitudinal vein deeply sinuate at end; upper branch of cubital fork regularly provided with a second vein-stump in middle besides usual one at base; first posterior cell much constricted at end; third posterior cell with an appendix in its base; wings adorned with many (four to five) confluent spots at apex; squamae dark brown.
pilhecius, Fabr.
- 2 (1). Second longitudinal vein less sinuate at end; usually no appendices in middle of upper branch of cubital fork, and in base of third posterior cell; first posterior cell not much narrowed at end; apex of wings devoid of spots; squamae white or whitish.
- 3 (6). Basal black pattern on wings extending beyond middle cross-vein, marginal cell being infuscated, with hyaline tip, and first submarginal and first posterior cells being broadly infuscated at base; plumula black.
- 4 (5). Wings with four isolated dark spots, three of which are situate on lower border of discoidal cell. *hessii*, Wied.
- 5 (4). Wings with only three isolated spots, two of which are in discoidal cell.
- a* (*b*). Wing-pattern diffuse and less strongly marked, isolated spots being small and less sharply defined; smaller species. ... *diffusus*, Wied.
- b* (*a*). Wing with blackish, well-defined pattern, and with broad, rounded, isolated spots, spot on cross-vein between discoidal and second posterior cell being united with fuscous area in first submarginal cell by means of a brown arch along upper end of discoidal cell; larger form.
majusculus, subsp. nov.
- 6 (3). Basal black pattern practically not extending beyond middle cross-vein, apical half of marginal cell being hyaline, and first submarginal and first posterior cells being only narrowly blackened at extreme base.
- 7 (14). Some distinct isolated brown spots in hyaline part of wings.
- 8 (9). Species of very large size, usually measuring 14–15 mm. in length, with wing-expanse of 31–34 mm.; two broad, isolated spots, one at base of upper branch of cubital fork, second at base of the third posterior cell; recurrent veinlets long; plumula white. *aygulus*, Fabr.
- 9 (8). Species of medium size, usually not exceeding 10 mm. in length, with wing-expanse of 20–25 mm.; recurrent veinlets short, or even rudimentary.
- 10 (13). Three isolated spots on wings, cubital one usually extending to second longitudinal vein; hyaline indentation before middle cross-vein usually deep and broad.
- 11 (12). Plumula white; halteres yellow; tibiae reddish; wing-pattern pale brown, with clear streaks at base; middle cross-vein on middle of discoidal cell. *trimaculatus*, v. d. Wulp.
- 12 (11). Plumula black; halteres black, with pale apical spot; tibiae black; wing-pattern intensely black, without clear basal streaks; middle cross-vein beyond middle of discoidal cell.
- a* (*b*). First basal cell broadly hyaline before its end, hyaline indentation extending uninterruptedly from discoidal cell to first longitudinal vein; apical dark spot in discoidal cell isolated. *nigerrimus*, sp. nov.

- b (a). First basal cell quite black as far as middle cross-vein, hyaline spot in marginal cell being thus separated from discoidal one; black spot on cross-vein between discoidal and second posterior cell broadly united with black pattern by a broad black arch running along upper terminal border of discoidal cell. *ocellatus*, subsp. nov.
- 13 (10). Only two isolated spots on wings, that at end of discoidal cell being wanting; cubital spot small; hyaline indentation less distinct; plumula black. *pusillus*, Wied.
- 14 (7). No distinct dark isolated spots in hyaline part of wings, or only a very indistinct one at base of cubital fork; recurrent veinlets often rudimentary.
- 15 (16). Wings with black basal area including nearly whole anal cell and axillary lobe, only extreme apex of each being hyaline; basal half of discoidal cell included in black portion; plumula usually white; first basal cell wholly black. *hemimelas*, Speis.
- 16 (15). Only basal part of anal cell and of axillary lobe occupied by black portion; discoidal cell infuscated only at extreme base, spot at base of third posterior cell therefore isolated; plumula often black.
- 17 (18). First basal cell hyaline at end, therefore black border with a dentiform spot in middle. *fuscipennis*, Ric.
- 18 (17). First basal cell entirely black, therefore no hyaline indentation and no dentiform spot in middle of black border of wings.
camptocladius, Bezzi.

Group 1. *A. pithecius*.

123. *Anthrax pithecius*, Fabricius (1805).

A species very variable in size, but at once distinguished by the confluent dark spots at the tip of the wings.

Widely distributed throughout the entire Ethiopian Region. I have seen specimens only 5 mm. long; but the length is usually much greater—12–14 mm.

The British Museum possesses numerous specimens of both sexes from the Uganda Protectorate: Western Ankole, 4,500–5,000 ft., 10–14 October, 1911 (*Dr. S. A. Neave*); banks of the Nile near Kakindu, 3,400 ft., 24–25 August, 1911 (*same collector*); 150–200 miles W. of Kambove, 3,500–4,500 ft., 17 October, 1907 (*same collector*); N.-W. Rhodesia, Kilanga (*R. C. Wood*); Nyasaland, Port Herald, wet season, 1912–1913 (*Dr. J. E. S. Old*); N. Nigeria, Oke-Odde, 20 April, 1912 (*Dr. J. W. Scott Macfie*); the last-mentioned specimen has a somewhat different wing-pattern, the marginal dark spots being less confluent than usual, and the stumps of veins less developed or even lacking. There are also other specimens from:—Nyasaland, Mt. Mlanje, 17 November, 1912 (*Dr. S. A. Neave*), and Zomba (*Dr. H. S. Stannus*); Natal, Heavitree, near Estcourt (*D. Dibben*); and Tanganyika Territory, Lulunguru, 17 November (*Dr. G. D. H. Carpenter*).

Group 2. *A. hessii*.

124. *Anthrax diffusus*, Wiedemann (1824).

Characterised by the dark pattern of the wings not being sharply defined, and extending to the cubital fork and the spots of the discoidal cell.

The wing-pattern of the species of this group is very like that of *A. anthrax*, or of *A. maculosa*, Sack.

There is a single ♂ in the British Museum from Arabia, Aden, 16 March, 1895 (*Lt.-Col. C. G. Nurse*), which may provisionally be assigned to the present species, as a new variety.

var. *decisus*, var. nov.

♀. Differing from the typical form in having the fuscous pattern of the wings more clearly defined, the line of demarcation between it and the hyaline tip and hind border being more abruptly indicated; thus the infuscations at the base of the cubital fork, and of the discoidal cell and base of the third posterior cell have the shape of broad rounded fuscous spots, which are connected with the dark basal part; discoidal cell hyaline, with basal third and upper border at end infuscated. The coloration of the body and the white pattern on the abdomen are as in *A. diffusus*; plumula similarly black.

125. *Anthrax diffusus* var. *majuseculus*, var. nov.

Differing from the typical form and from the preceding variety in being much larger, and having a somewhat different wing-pattern.

It appears that the South African *A. diffusus* is widely distributed in the Ethiopian Region, and has thus become differentiated into races.

A pair of specimens from Belgian Congo (*Dr. S. A. Neave*): ♂ type from Lualaba R., 2,500–4,000 ft., 23 April, 1907; ♀ type taken 150–200 miles W. of Kambove, 3,500–4,500 ft., 19 October, 1907.

♂♀. Length of body 12 mm.; length of wing 14 mm.; wing-expanse 33 mm.

Frons and face black-haired, latter also with scattered whitish hairs; frons of ♀ one and a half times as broad as that of ♂ squamae white, with white fringe; plumula black. Abdomen with black hair on sides, first segment only bearing a white tuft on each side; in ♂, second to fourth segment on sides, and last segment on entire surface clothed with argenteous scales, represented in ♀ by only a few scattered ones. Fuscous pattern of wings much more defined and more blackish than in typical form; marginal cell with only terminal portion hyaline, beginning a little before terminal loop; first posterior cell with hyaline basal spot; dark spots at base of cubital fork and third posterior cell very broad and rounded; broad fuscous spot at end of discoidal cell broadly united above with apical fuscous spot in first posterior cell, thus forming an arcuate band along upper border of cell; bend of upper branch of cubital fork with an appendix in the middle, like that in *A. pithecius*. In var. *decisus* the isolated dark spots are likewise large and rounded, and the spot in the discoidal cell is similarly united; but there is no hyaline spot in the base of the first posterior cell; the size, more-

over, is much smaller (only half as large), and the wing-pattern is less intense.

Group 3. *A. aygulus*.

126. *Anthrax aygulus*, Fabricius (1805).

A species of large size, easily recognisable by its dimidiate wings, which are marked with two isolated dark spots.

A. aygulus appears to have a very wide distribution. The type was obtained in Guinea, and in 1912 I recorded it from N. Nyasa; moreover, I have seen it from the Cape, and have it from Togo in my own collection. It is interesting to mention that I have seen specimens from Formosa, undoubtedly belonging to this species, which must therefore have a wide range in the Oriental Region also. It is not recorded as Oriental in the Catalogues, but van der Wulp as long ago as 1868 was aware of its existence in the East.

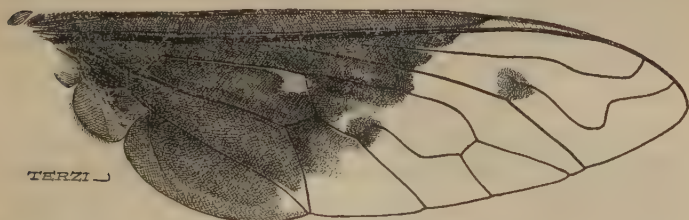


FIG. 14.—*Anthrax aygulus*, Fabr. Wing of ♀. $\times 6$.

The collection before me contains a ♀ from Nigeria, Minna, October, 1910; there are also numerous specimens of both sexes from Boro, September, 1910 (*Dr. W. Morrison*), and Lokoja, 1911 (*Dr. C. F. Watson*); and others from N. Territories Gold Coast, Yeti and Makongo, January–February, 1913 (*Dr. J. J. Simpson*), and Belgian Congo, Katanga District, Kikondja (*Dr. J. Schwetz*). In this species the recurrent veinlets are long, and there is sometimes a supernumerary stump on the middle of the upper branch of the cubital fork, like that in *A. pithecius*; the cubital spot is usually small, but is sometimes large enough to reach the second longitudinal vein.

127. *Anthrax trimaculatus*, v. d. Wulp (1868).

This species is characterised by a large hyaline indentation in the dark fore border of the wing before the middle cross-vein; by a clear stripe in the basal cells; and by the presence of three dark spots in the hyaline portion.

A. trimaculatus, originally described from Timor, is considered by some authors as a variety, and by others merely as synonymous with the Oriental *A. distigma*, Wied. Its wing-pattern is very characteristic, and there is a good photograph of it in *Dr. Sack's*

monograph, Pl. 22, fig. 3. I am unable to decide whether the African and the Asiatic forms should be referred to a single species; but I place here a ♀ in the British Museum from S. Africa, Cape Province, Annshaw (*Barrett*), which has no stump on the upper branch of the cubital fork, but a clear streak near the base of the first basal cell, and also the dark streak along the discoidal cell as clearly defined as in Sack's photograph. Another, less well-preserved ♀ specimen from Natal, Ulundi, 5,000–6,500 ft., September, 1896 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*) has a long stump on the upper branch of the cubital fork, and a smaller cubital spot, while the end of the discoidal cell is less infuscated, and there is a clear streak even in the second basal cell.

A ♀ from Sardinia in my collection is very like the above-named South African specimen of Barrett, and corresponds almost exactly with Sack's photograph, but has also a hyaline streak in the upper part of the second basal cell before the praediscoidal spot.

It is evident that the difference between the present form and *A. varius*, Fabr. (Sack's Pl. 22, fig. 6) is very slight.

128. *Anthrax nigerrimus*, sp. nov.

Very like the preceding species, but differing in the deep black colour of the wing-pattern, and the predominant black colour of the entire body.

Type ♂ and type ♀ from Kenya Colony, 5 to 7 miles within Kenya Forest, near Luchi R., 9–10 February, 1911; another ♀ from S.-E. edge of Kenya Forest, 5,000–6,000 ft., 7 February, 1911; another from E. foot of Mt. Elgon, 6,000 ft., 2 March, 1912 (the late *Capt. R. B. Woosnam*). The last-mentioned specimen forms an approximation to *A. ocellatus* in having an almost interrupted hyaline indentation.

This elegant species seems to be not uncommon in the mountains of E. Africa and adjacent countries, since it was also captured by Alluaud and Jeannel, and by Katona. I will not here enter into the question whether the present form may also be considered as belonging to the *distigma*-concept of authors.

♂♀. Length of body 8–9 mm.; length of wing 9–11 mm.; wing-expanse 21–25 mm.

Head deep black, dull; occiput with short black hairs and dark brown central fringe, with very sparse white scales on sides and near indentation in eyes; postvertical furrow deep, brownish ocellar tubercle in front of it very small, in shape of a little sphere. Eyes with equal facets in both sexes; frons in ♂ only a little narrower than in ♀, clothed with black erect hair, and only near antennae with some whitish scales; face with entirely black hairs, but with upper part bare and with a dark grey dust. Antennae short, black; first joint with black hairs; third joint with a projecting border, and with a short styliiform part, which

is bisected beyond middle and ends in a long terminal pencil. Proboscis black. Thorax and scutellum deep black, with black hair and black bristles, except that on sides of collar there are some sparse pale hairs; pleurae black and black-haired. Squamae dirty whitish, with short white fringe; plumula black; halteres black, with a small yellowish spot at end. Abdomen deep black and entirely black-haired, even at base, in ♂, but in ♀ with some greyish hairs at base; last three segments in ♂ clothed with argenteous scales, and in ♀ with some white scales on sides; venter deep black and black-haired. Genitalia of ♂ black, with dark reddish base; anal tuft of ♀ dark yellowish. Legs entirely black, with black hairs on coxae and femora, and with black spines; all femora spinose beneath, those of hind legs bearing a complete row of seven to nine spines; claws black; pulvilli blackish. Wings with a dark brown basal hook, and with a black comb; veins black; recurrent veinlets at base of second longitudinal vein and at base of cubital fork wanting or rudimentary; second longitudinal vein with a rather deep loop at end; upper branch of cubital fork gently curved in middle, and regular; middle cross-vein situate beyond middle of discoidal cell, second longitudinal vein originating before it; anal cell narrowly open or even closed at tip; discoidal cell twice as long as second posterior cell; first posterior cell not distinctly narrowed at tip; lower vein of discoidal cell but little bent; alula deep black, with dark fringe; wing-pattern deep black, and very like Sack's Pl. 22, fig. 3; but black area at base completely reaches hind border of axillary lobe; hyaline indentation before middle cross-vein very broad and deep, reaching first vein; black dentiform spot broad, ending in discoidal cell in a point; costal cell deep black, like surrounding parts; three isolated spots of same black colour as basal pattern; cubital spot broad, and reaches second vein; praediscoidal spot dark grey, no clear stripes in basal cells; dark longitudinal stripe in discoidal cell not distinct.

129. *Anthrax nigerrimus* subsp. *ocellatus*, subsp. nov.

Distinguished from the preceding by the body being more robust, and by a somewhat different wing-pattern; but since there are intermediate characters, I prefer to consider it as a simple subspecies.

Type ♀ from Uganda Protectorate, Mpanga Forest, Toro, 4,800 ft., 13–23 November, 1911 (*Dr. S. A. Neave*); additional ♀ from Kenya Colony, Yala R., S. edge of Kakunga Forest, 4,800–5,300 ft., May 21–28, 1911 (*same collector*). This subspecies, like the typical form, is evidently a denizen of mountain regions.

♀. Length of body 9 mm.; length of wing 10 mm.; wing-expanse 23 mm.

Difference from the type is to be found only in the wing-pattern. Black spot at base of cubital fork rectangular or

subquadrate, sometimes reaching, sometimes falling short of second longitudinal vein; spot at base of third posterior cell likewise subquadrate; that at end of discoidal cell broadly united above with fuscous margination of apical upper part of same cell, thus forming a broad black arch, which in region of discal cross-vein is broadly united with black at base of first posterior cell and at end of first basal cell. But main characteristic of this new subspecies concerns hyaline indentation passing from discoidal cell to fore border; this indentation is divided by entirely black end of first basal cell, thus producing an isolated hyaline spot in base of marginal cell. Isolated black spots two in number only, since third spot is united with long black band in middle of wing.

130. *Anthrax pusillus*, Wiedemann (1821).

This species may be described as an *A. trimaculatus* without a black spot at the end of the discoidal cell, thus agreeing with Pl. 22, fig. 4 (*A. leucogaster*) of Dr Sack's Monograph.

The British Museum possesses specimens of this species from Nyasaland (*Dr. J. B. Davey*; *R. C. Wood*) and the Gold Coast, N. Territories (*Dr. J. J. Simpson*).

131. *Anthrax hemimelas*, Speiser (1910).

A well-defined species, with wings exactly half black, half hyaline, the black pattern extending almost to the end of the anal cell.

In my paper of 1912, I described this species, from a ♀ from N. Nyasa, under the name *A. homogeneous*; Dr. Speiser, however, had previously described it from Meru. The ♀ alone is at present known; and it is interesting to note that the numerous specimens in the British Museum are likewise exclusively ♀♀. These include examples from N. Nigeria, Zungeru, March-May, 1911 (*Dr. J. W. Scott Macfie*); Dajji, near Rogun, October, 1911 (*same collector*); Minna, October, 1911 (*same collector*); N. Territories, Gold Coast, 14 February, 1913 (*Dr. J. J. Simpson*); and others from the Sierra Leone Protectorate, Togoland and N. Rhodesia. The length of the present species varies between 7 and 11 mm.

132. *Anthrax camptocladus*, Bezzi (1912).

Closely allied to the preceding, but differing in having the wings not so precisely dimidiate, the black pattern ending in the middle of the anal cell.

A. camptocladus is probably only a form of *A. muscarius*, Klug *nec* Pallas (= *A. fuscipennis*, Ricardo; *A. dentatus*, Becker), the hyaline indentation which produces the black dentiform projection on the fore border of the wings appearing to be variable. The upper branch of the cubital fork is also more or less irregularly sinuate; in typical specimens its course is very curious.

There are in the British Museum two ♂♂ from N.-W. Rhodesia, Chilanga, 19 September, 1913, "on path" (*R. C. Wood*); also examples from the Nyasaland Protectorate (*Dr. J. B. Davey*).

Of the two ♂♂, one has a white, the other a dark plumula. The as yet undescribed ♀ is very like the ♂, but has a distinctly broader frons; the plumula is black.

133. *Anthrax fuscipennis*, Ricardo (1903).

A well-known species, widely spread over the Ethiopian Region and described under several different names; *A. muscarius*, Klug (1832), which is the oldest of these is preoccupied.

In addition to the typical series from Sokotra, the British Museum possesses: one ♂ from N. Nigeria, Zungeru, 2 March, 1911 (*Dr. J. W. Scott Macfie*); one ♀ from N. Nigeria, Ilorin, April 12 (*same collector*); and one ♀ from Belgian Congo, 150-200 miles W. of Kambove, 3,500-4,500 ft., 14 October, 1907 (*Dr. S. A. Neave*). The latter specimen has in the right wing the upper branch of the cubital fork united to the main stem by a supernumerary cross-vein, thus forming another submarginal cell exactly as in the genus *Hyperalonia*.

Genus 23. *SPONGOSTYLUM*, Macquart (1840).

This name is adopted here, following the example set by Williston (who, however, used the incorrect spelling *Spogostylum*), for the species of *Argyramoeba* of authors, for which I employed the name *Molybdamoeba*, Sack, in my paper of 1912. The type of the latter genus is indeed *A. tripunctata*, the species which was selected by Coquillett in 1910 as the type of the genus *Argyramoeba*. Moreover, it was stated by Becker in 1913 that the differences between *Molybdamoeba*, *Psamatamoeba*, *Chrysamoeba* and *Anthracamoeba*, Sack, are not of generic value. Loew and Sack used the name *Spongostylum* in a different sense, for the species with three submarginal cells, with *A. ocyale*, Wied., as the type. But to treat the number of submarginal cells as a character of generic value is not a valid proceeding, as has already been seen in the case of *Triplasius*, *Callynthrophora*, *Systropus*, etc. In the present instance the number of these cells is due to the fact that the recurrent veinlet at the base of the upper branch of the cubital fork is prolonged until it reaches the second longitudinal vein. In general shape and other characters the species with three cells agree perfectly with species of *Argyramoeba* in which the recurrent veinlets are often very long. A comparison between the type species *A. ocyale* and the closely allied *Arg. crosi*, Villeneuve, shows that these two species can scarcely be assigned to different genera, notwithstanding the different number of submarginal cells. It is very probable that the type species of the genus *Spongostylum* of Macquart (*Sp. mystaceum*, from S. America) is an *Argyramoeba* with

accidentally divided submarginal cell; the original figure of the wing shows indeed a condition very different from that of *A. ocyale*. It might therefore be thought necessary to seek a new name for the Old World species with three submarginal cells; I prefer, however, to include them in a single genus with those with only two submarginal cells, and to retain the name *Spongostylum* for the entire series.

To distinguish the species of *Spongostylum* in the present sense from those of the preceding genus *Anthrax*, on the basis of the characters given above, is not easy; the species in question, however, have a peculiar facies, which is much like that of *S. tripunctatum*, or of some species of *Psamatamoeba*. Thus the principal species *S. incisurale* and *S. punctipenne* closely resemble *Ps. trinotata* and *Ps. dedecor* (Pl. 21, figs. 2 and 3 of Sack's Monograph), which, however, are without the alternating white and black tufts on the sides of the abdomen.

It is curious to note that in the genus *Spongostylum* there are numerous Ethiopian species, most of which are here described for the first time; while in *Anthrax* there are only a solitary species, which is new, and a great many names. Moreover, the species of *Spongostylum* here recorded are all exclusively Ethiopian, while those of *Anthrax* are in part common to the Ethiopian and Oriental Regions. The species are very difficult to distinguish, and perhaps they are only varieties of a smaller number of species; those before me can provisionally be distinguished as follows:—

- 1 (20). Only two submarginal cells; dark spots on wings few in number and not confluent.
- 2 (3). Wings with a broad, *Anthrax*-like dark pattern at base and on fore border, filling up entire second basal cell; hair on abdomen, except at base, entirely black; legs quite black. . . . *subanthrax*, sp. nov.
- 3 (2). Wings hyaline to base, merely with infuscated cross-veins, and without a broad dark band at base and on fore border.
- 4 (5). Wings with five very broad, rounded brown spots, one of which is situate on outer cross-vein of discoidal cell; no recurrent veinlets at base of second longitudinal, and on upper branch of cubital fork; front femora devoid of bristles; abdomen with no distinct bristly hairs. *quinquemaculatum*, sp. nov.
- 5 (4). Wings with a different pattern, at any rate always destitute of a broad rounded spot on outer end of discoidal cell; recurrent veinlets usually present, and very long; front femora with some bristles on anterior side; abdomen with distinct and long bristly hairs.
- 6 (19). Frons clothed entirely with black hairs; abdomen on sides with alternating tufts of white and black hair or scales; antennae quite black; thoracic macrochaetae entirely black, or only some postalar ones yellowish.
- 7 (14). No distinct brown spot at base of cubital fork.
- 8 (9). Origin of second longitudinal vein situate a little before middle cross-vein; base of second vein and of cubital fork usually devoid of recurrent veinlets, or latter, if present, very short. . . . *muticum*, Bezzi.
- 9 (8). Origin of second vein exactly opposite middle cross-vein; recurrent veinlets always present, and usually of considerable length.
- 10 (13). Face with white and black hairs, latter usually predominating; abdomen with yellow hind borders of segments little noticeable; anal cell open.

- 11 (12). Yellowish tomentum predominant on body, thus upper side of abdomen appearing greyish; wing veins broadly yellow towards base. *incisurale*, Macq.
- 12 (11). Black tomentum predominant, thus abdomen blacker; wing-veins blackish to base. *decipiens*, Bezzi.
- 13 (10). Face exclusively clothed with whitish hair; abdomen with yellow hind borders to segments; anal cell closed. ... *leucopogon*, Bezzi.
- 14 (7). A distinct brown spot at base of cubital fork.
- 15 (16). Wings strongly infuscated on entire surface; tibiae nearly black; abdomen black, without yellow hind borders; pleurae black-haired. *saturatum*, sp. nov.
- 16 (15). Wings entirely hyaline; tibiae pale reddish; abdomen greyer, with well-developed yellow hind borders; pleurae white-haired.
- 17 (18). Lateral black tufts of abdomen formed by usual hairs, like those of all preceding species; postalar macrochaetae in part yellow; dark spot at base of cubital fork very small. *inquirendum*, Bezzi.
- 18 (17). Lateral black tufts formed by scaly hairs; postalar macrochaetae black; cubital spot rather broad. *punctipenne*, Wied.
- 19 (6). Frons with whitish hairs predominant; abdomen on sides with white hairs, black tufts being very small or wanting; antennae reddish; thoracic macrochaetae in great part yellow; legs wholly or for most part yellow. *ventrale*, sp. nov.
- 20 (1). Three submarginal cells; wings adorned with numerous and in part confluent blackish spots. *princeps*, sp. nov.

Group 1. *Sp. subanthrax*.

134. *Spongostylum subanthrax*, sp. nov.

A black and almost entirely black-haired species, which shows an *Anthrax*-like wing-pattern, but has the antennal and venational characters of a *Spongostylum* of the group *Argyramoeba*.

Type ♀, and an additional specimen of same sex from Sierra Leone, Konta, 27 March, 1912 (*Dr. J. J. Simpson*); another ♀ from N. Nigeria, Kogin, 27 November, 1910 (*Dr. J. W. Scott Macfie*); all three presented by the Imperial Bureau of Entomology.

♀. Length of body 6-8 mm.; length of wing 7-9.5 mm.; wing-expanse 17-22 mm.

Head black; occiput strongly developed, postvertical furrow narrow and very deep, with ocellar tubercle, which is small and rounded, projecting from its anterior end; occipital hair very short and black, and on whole lateral part, chiefly near eyes and within their indentations, there are numerous white scales. Frons with a shallow median furrow near ocelli, and clothed with erect black hair, anterior half with white scales, which are more numerous near antennae; face with entirely black hairs, with which a few white scales are intermingled; upper half of face bare, and densely covered with greyish dust. Antennae short and black; first joint with black hairs; third joint globular, with styliform part short, bisected in middle, with a very long terminal pencil. Proboscis black. Thorax and scutellum black, with black hair and black macrochaetae; collar on fore border formed by whitish hairs, edged behind with black ones; scaly tomentum black in middle, white on sides and behind; pleurae

with long black hairs above, and with short ones on sternopleura and on lower part of mesopleura. Squamae dirty white, with white fringe; plumula white; halteres black, with knobs white-spotted at end below. Abdomen entirely black, somewhat shining; first segment with dense whitish hair, remainder with entirely black hair, which is erect and bristly; hind borders of segments with rows of white scales. Venter entirely black, white-scaled and white-haired; anal tuft of ♀ small, golden yellow; reflexed ventral side of sternites with some white hairs intermingled with black ones; a dense black tuft on sides of broad second segment. Legs entirely black, with dark scales on anterior and whitish ones on posterior side; coxae with white and black hair intermingled; all spines black, front femora with only one or two very minute ones, middle femora with four or five, and hind femora with a complete row; claws black; pulvilli dark grey. Wings long and narrow, hyaline, with blackish basal pattern, which extends from base to end of auxiliary vein, and reaches sixth vein, filling whole of second basal cell and only extreme base of anal cell, axillary lobe being completely hyaline; within this dark pattern base of second vein, middle cross-vein and vein at end of second basal cell infuscated in such a way as to resemble spots; a small infuscation at extreme base of third posterior cell forms a little isolated spot; first submarginal, first posterior and discoidal cells only narrowly infuscated at extreme base; praediscoidal spot greyish. Second vein originating a little before middle cross-vein, and but little looped at end; upper branch of cubital fork only gently curved in middle and straight beyond bend; recurrent veinlets very long, twice as long as their basal parts; first posterior cell but little narrowed at end; middle cross-vein situate considerably before middle of discoidal cell, which is twice as long as second posterior cell and narrow, with lower vein only a little curved; anal cell proportionally broadly open; alula greyish, infuscated at base, with short pale fringe. Basal hook blackish-brown or reddish; basal comb black, small, whitish tomentose; veins black, with dark-reddish bases.

Group 2. *S. quinquemaculatum*.

135. *Spongostylum quinquemaculatum*, sp. nov.

An interesting species, very distinct from any other owing to its peculiar wing-pattern, and the complete absence of recurrent veinlets in the wings, which is an aberrant character for the present genus.

Type ♀ from W. Africa, Senegal, 1903 (*Drs. H. E. Dutton and J. L. Todd*). Two additional ♀ specimens from Gambia, MacCarthy Island, 21 March, 1911, and N'Tau, 15 March, 1911 (*Dr. J. J. Simpson*). This species seems to be exclusively West African.

♀. Length of body 8-9.5 mm.; length of wing 9-10.5 mm.; wing-expanse 19-25 mm.

Head black, dark grey dusted. Occiput with postvertical furrow broad, and with a few short black hairs near it; fringe on borders of central cavity of neck brownish; near eye-borders, below posterior indentation, there are whitish scales. Ocellar tubercle very small, black, globular with three ocelli near together. Frons above about one-seventh, anteriorly one-fourth of breadth of head, with a broad median longitudinal furrow in upper half, clothed with erect black hairs and below them with sparse pale yellowish tomentum; near eye-borders there is a narrow stripe of white dust. Face entirely clothed with pale yellowish hairs, except that in middle and near mouth some black ones are intermingled, these hairs extending to antennae, instead of being confined to lower half, as in other species; chin, like lower part of occiput, with pale grey dust and sparse white hairs. Antennae short, black; first joint with narrow yellow borders and sparse short hairs, which are black above and yellowish beneath; styliform part of third joint about as long as rest, bisected and provided with some hairs at end. Proboscis very short, retracted, black, with broad labella; palpi not visible. Thorax and scutellum black, dark grey dusted, with yellow tomentum and sparse erect black hairs; on collar are white hairs intermingled with bristly black ones; all macrochaetae black; pleurae pale grey dusted, and white-haired, only on upper border of mesopleura a tuft of pale yellowish hairs and bristles. Squamae quite white, with short white fringe; plumula white; halteres dark brown, knobs whitish beneath. Abdomen oval, black, with dense yellowish tomentum and erect black hairs, like thorax; first segment with long whitish hairs; no distinct bristles on hind borders of segments, which are without pale margins; posterior segments have white scales on hind borders near sides; sides alternately black and whitish, but black hairs much more numerous; venter black, grey dusted, with long white hairs; anal tuft pale yellowish, very dense and rich. Legs entirely black, with whitish scales; ground-colour of front and middle tibiae, and first tarsal joints of front and middle legs sometimes pale reddish; coxae and hind femora near base beneath with white hair; all spines and spicules black, front femora without spines, middle femora above with three or four, hind pair with four spines beneath at end; spicules on all tibiae well developed; claws black, with yellow bases; pulvilli dark greyish. Wings long, greyish hyaline, costal cell and extreme base slightly infuscated. Five broad dark spots on each wing as follows: first forming a short band extending from base of third vein to end of second basal cell and base of fourth posterior cell; grey praediscoidal spot included in this band; second forming an abbreviated band, extending from first to fourth vein, and enclosing base of second vein and middle cross-vein; third, very broad and rounded, at base of

upper branch of cubital fork; fourth, likewise very broad, situate on outer cross-vein of discoidal cell; fifth smallest of all, and placed at extreme base of third posterior cell. Basal hook and small basal comb black; veins black, with pale reddish bases; alula slightly infuscated, with short whitish fringe. Second vein originating just opposite middle cross-vein, without angular bend, devoid of appendix and but slightly looped at end; upper branch of cubital fork rounded at basal bend and without appendix, gently curved in middle, and thence running almost straight; first posterior cell narrowed at end; discoidal cell more than twice as long as second posterior cell, with middle cross-vein situate before its middle, and with its lower vein but slightly looped in middle; anal cell closed on border or very narrowly open; axillary lobe broad. Wing-membrane somewhat wrinkled, chiefly on posterior half.

Group 3. *S. tripunctatum* (Gen. *Argyramoeba*
i. sp. = *Molybdamoeba*, sens. lat.).

136. *Spongostylum incisurale*, Macquart (1840).

A greyish, yellowish tomentose species, with two or three dark spots on the hyaline wings, and with alternating white and black tufts of hair on the sides of the abdomen.

In the present species the pale hind borders of the abdominal segments are usually less developed; but in denuded specimens they are always distinct, at least on the last segments; it thus appears to be beyond doubt that *Sp. mixtum*, Loew (1860) is a synonym of this species. Moreover, since *Sp. incisurale* occurs throughout the Ethiopian Region, *Arg. massauensis*, Jaenicke (1867), also seems to be identical with it, especially in view of the fact that specimens with wings more or less infuscated at the base and on the fore border are not rare.

Of this common species there are in the collection before me specimens from Angola, Benguella, 1905 (*Dr. F. C. Wellman*); from the Nyasaland Protectorate, April-May, 1908 (the late *Capt. H. Hardy*), and River Chigole, Marimba, 18 June, 1912, and Central Angoniland, lat. 13° 10' S., long. 34° 40' E. (*J. G. Morgan*); from Kenya Colony, Nakuru, January, 1913 (*Dr. B. L. Van Someren*); from Kenya Colony and Abyssinia, Djibuti, November-December (*R. J. Stordy*), these specimens being very like *Sp. isis*, Meigen; from N. Nigeria, Kagin Sirikin Powa, 24 November, 1910 (*Dr. J. W. Scott Macfie*); and from the Gambia, Burem, 28 March, and Tendaba, 7 April, 1911 (*Dr. J. J. Simpson*).

137. *Spongostylum incisurale* var. *inquirendum*, Bezzi (1912).

Differing from the preceding in having a narrow fuscous border at the base of the upper branch of the cubital fork, in

the yellowish hind borders of the segments being more developed, and in the postalar macrochaetae being in part yellowish.

It is probable that Macquart in describing *Sp. incisurale* had the present form before him; but in the original description it is stated that only the middle cross-veins are infuscated. The form is intermediate between *Sp. incisurale*, as interpreted above, and *Sp. punctipenne*, Wied.

The British Museum possesses specimens of both sexes from the Gambia, 13-16 April, 1911 (*Dr. J. J. Simpson*), and Belgian Congo, Kambove, Katanga, 5 June, 1907 (*Dr. S. A. Neave*); likewise further material (presented by the Imperial Bureau of Entomology) from the British Sudan, R. Yei, Lado District, 1 February, 1911 (*H. H. King*), and Abyssinia, November, 1911 (*R. J. Stordy*).

138. *Spongostylum decipiens*, Bezzi (1912).

Closely allied to *Sp. incisurale*, being perhaps only a dark form of it, differing in the predominant black colour of the abdomen, abdominal tomentum and wing-veins.

Originally described from Nyasaland: there are in the British Museum specimens from N. Nigeria, Kuduna R., 10 December, 1910 (*Dr. J. J. Simpson*); from N. Rhodesia, Kosempu District, 1907 (*Dr. A. Yale Massey*); also numerous specimens of both sexes from Nyasaland, Zomba and Norema Dedza, 1,800 ft., 11 April, 1917 (*R. Drummond*); from Belgian Congo, Kambove, Katanga, 4,000-5,000 ft., 16 June, 1907 (*Dr. S. A. Neave*); from N. Rhodesia, Victoria Falls, July, 1914 (*Miss J. Brincker*), and from the Transvaal, Wonderboom, Pretoria, 20 March, 1914 (*same collector*). In addition (presented by the Imperial Bureau), there are examples from N.-W. Rhodesia, Chilanga, August-September, 1912, "on shady path, on sandy road" (*R. C. Wood*); and from Nyasaland, Central Angoniland, lat. 13° 10' S., long. 34° 40' E. (*J. G. Morgan*).

139. *Spongostylum saturatum*, sp. nov.

Allied to the preceding on account of the black colour of the body, and agreeing with *Sp. punctipenne* in the clouded base of the upper branch of cubital fork; but differing from both owing to its black legs and infuscated wings.

Type ♀, a solitary specimen from Sierra Leone, Yana, 31 March, 1912 (*Dr. J. J. Simpson*: presented by the Imperial Bureau of Entomology).

♀. Length of body 13 mm.; length of wing 15 mm.

Head black, with black hair on frons and face, only fringe on borders of occipital cavity being dark brownish. Antennae black; first joint with short, entirely black hairs; bisection of styliform part of third joint exactly in middle. Thoracic macrochaetae black; hair on pleurae for most part black; squamae dirty whitish, with whitish fringes; plumula white; halteres brown,

knobs pale yellowish beneath. Abdomen black, with black tomentum at base and in middle, white scales on sides and at end, and with black hair and bristles; first segment alone has a tuft of whitish hair on each side, remaining hair on sides being black; venter entirely black, white-scaled and white pilose; anal tuft golden. Legs entirely black, except that front and middle tibiae have a slight dark reddish tinge; coxae with black hairs; scales pale yellowish; spines black, present on all femora, those of hind pair bearing a complete row of eight or nine, from base to tip; claws black; pulvilli dark yellowish. Wings exactly as in *Sp. punctipenne*, and with similar clouds on cross-veins; they are, however, strongly infuscated over whole surface, being only a little clearer on hind border. Basal hook dark reddish; basal comb well developed, black; alula infuscated, with short pale fringe. Origin of second vein a little beyond middle cross-vein; recurrent veinlets very long, twice as long as basal portion of angles on which they are placed.

140. *Spongostylum leucopogon*, Bezzi (1912).

Described from N. Nyasa as a *Molybdamoeba*: there is in the British Museum a ♀ from the Transvaal, Pretoria, March, 1914 (*Miss J. Brincker*), with the anal cell narrowly open.

141. *Spongostylum punctipenne*, Wiedemann (1821).

A species very like *Sp. incisurale* in general facies, but distinguished by the broad dark cloud at the base of the upper branch of the cubital fork, and differing from any other in the lateral black tufts on the abdomen being formed by broad, flattened, scale-like hairs. The British Museum has received from the Imperial Bureau of Entomology two very small ♀♀, one measuring 7 mm. and the other only 5 mm. in length, respectively from N.-W. Rhodesia, Kafu, 31 August, 1913, and Chilanga, 5 September, 1913, "on sandy path" (*R. C. Wood*). In the larger specimen the postalar macrochaetae are dark yellowish. The data with regard to other examples in the Museum are as follows: Nyasaland, Dedza D., near Mua Mission, "hovering on path," 18 August, 1913 (*Dr. J. B. Davey*), and Fort Johnston, 1,200 ft., July, 1910 (*Dr. A. H. Barclay*); Transvaal, Pretoria, March, 1914 (*Miss J. Brincker*); N. Rhodesia, Algoa, 2 May, 1910 (the late *O. C. Silverlock*).

142. *Spongostylum ventrale*, sp. nov.

Recognisable by the predominantly pale colour of the hair on the frons, and of the thoracic macrochaetae, and by the reddish colour of the antennae and legs.

This species appears to be allied to *Sp. niphas*, Hermann, which is recorded from Sokotra by Becker, but it differs therefrom in the abdominal bristles being black, instead of yellowish.

Type ♂, type ♀, and many additional specimens from Kenya Colony and South Abyssinia, September, 1911 (*R. J. Stordy*: presented by the Imperial Bureau of Entomology).

♂♀. Length of body 8–10 mm.; length of wing 8–10 mm.

Head black, grey dusted; occiput of usual shape, with short pale yellowish hair and yellowish middle fringe, and clothed with dense whitish scales on sides near eyes; ocellar tubercle very small, globular and prominent. Frons of ♂ not distinctly narrower than that of ♀, clothed with whitish scales and erect pale hairs, frons in ♀ with black hair on basal half. Eyes with equal facets in both sexes. Face with entirely whitish hairs, but bare on upper half. Antennae short, pale reddish, but third joint more or less infuscated or even blackish, especially in ♀; first joint with short pale hair; third joint globular, with styliform part short, black, bisected in middle. Proboscis black, retracted, with usual broad labella. Thorax and scutellum black, with pale yellowish tomentum, whitish hair in front and on sides, and black and sparse hair in middle and behind; all bristles yellow, except praealar three, which are black, long and strong; pleurae with white hair. Squamae and plumula white, white-fringed; halteres yellow, with white knobs. Abdomen black, grey dusted; second segment very long and, like following ones with a broad yellow hind border; hind borders forming transverse bands, which are broadened and fused on sides; abdomen clothed with yellowish tomentum, whitish scales on sides and on posterior half, and erect black bristly hairs; hair on sides mainly white and short; in middle of each side of second and fourth segments there is a small black tuft, which is often scarcely distinguishable. Venter reddish-yellow, white-scaled and white pilose; ♂ genitalia retracted, red; ♀ tuft small, pale yellowish. Legs including coxae pale yellow, except that in ♂ coxae and femora are black, with broad yellow tips; tarsi blackened at tips; scales yellowish; hair on coxae white; all spines black, in case of femora consisting of one or two on front pair, and a complete row on hind pair; claws yellow, with black tips; pulvilli yellowish. Wings relatively short, whitish hyaline, with a faint pale yellowish tinge on first costal cell, at extreme base and on alula; there are only two small fuscous spots, one at base of second longitudinal vein and on middle cross-vein, the other on cross-vein dividing fourth posterior cell from second basal; in addition, base of third longitudinal vein is faintly shaded below. Basal hook pale yellow; basal comb black, but clothed with yellow tomentum; veins pale yellow, first throughout its whole length, remainder in basal half; origin of second vein just opposite middle cross-vein; second vein but slightly looped at end; upper branch of cubital fork gently curved, almost straight beyond bend; recurrent veinlets shorter than in preceding species, being shorter or as long as their bases; middle cross-vein situate before middle of discoidal cell, which

is relatively short, less than twice as long as second posterior cell; first posterior cell but little narrowed at end; lower vein of discoidal cell S-shaped; anal cell narrowed at end, but relatively wide open; second posterior cell distinctly narrower and longer than in allied species.

Group 4. *Spongostylum*—*sensu* Loew.

143. *Spongostylum princeps*, sp. nov.

An extremely interesting species, at once distinguishable by its very peculiar wing-pattern.

Type ♂, type ♀, and another ♂ from Kenya Colony, S.-E. edge of Kenya Forest, 5,000–6,000 ft., 7 February, 1911 (*T. J. Anderson*); two additional ♂♂, also from Kenya Colony, W. slopes of Kenya, on Meru-Nyeri Road, 6,000–8,500 ft., 16–23 February, 1911 (*Dr. S. A. Neave*). Another of the numerous and important additions to the African Dipterous fauna, coming from the higher mountains of the East.

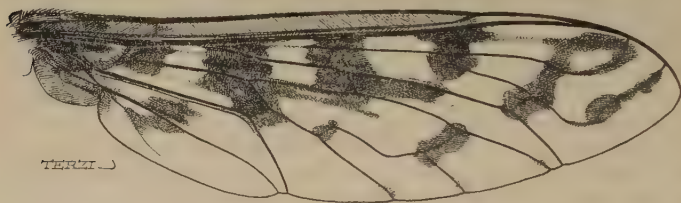


FIG. 15.—*Spongostylum princeps*, sp. nov. Wing of ♂. $\times 8$.

In wing-pattern this species is very different from all the others; but notwithstanding its three submarginal cells, its general facies is very like that of *Sp. punctipenne*, near which it should be placed in a more natural scheme of classification.

♂♀. Length of body 9–10 mm.; length of wing 10–11 mm.; wing-expanse 24–26 mm.

Head black, dark grey dusted. Occiput with short black hair above, near deep postvertical furrow, and with a dark brownish central fringe; on sides there are white scales, which are denser near eye-indentations; occiput less depressed than usual at vertex, with round and small ocellar tubercle placed in anterior end of occipital groove. Eyes reniform, with equally small facets in both sexes; frons of ♂ distinctly, but not much, narrower than that of ♀, clothed in both cases with erect black hair, and bearing on anterior half numerous scales, which are yellowish towards centre and dirty whitish on sides, especially above base of antennae. Face bare and grey on upper half, with black and a few yellow hairs intermingled below, and with yellowish and whitish scales. Chin black, grey dusted, with very short pale pubescence. Antennae short, black; first joint

with black hairs; second joint with upper border brownish; third grey dusted, its basal part rounded and without projecting border, as in *Argyramoeba*, its styliform part short and thick, bisected beyond middle, with a long pencil at end. Proboscis black, retracted. Thorax and scutellum black, dark grey dusted, dull; there are erect dark hairs in middle, short, yellowish, depressed tomentose hairs in centre, and white hairs on sides and beneath, thus forming three more or less distinct longitudinal stripes; white tomentum of scutellum situate on hind border and in middle line. All macrochaetae black. Pleurae grey, with long white hair above on notopleural line, and below on sternopleura, and with yellowish ones on mesopleura; collar in front of mesonotum formed by white and black hairs. Squamae pale yellowish, with brown border and dirty whitish fringe; plumula whitish and yellowish; halteres yellow, with whitish knobs. Abdomen like thorax; yellow hind borders of segments more or less distinct, more developed in ♀; on sides of first segment there is a rich tuft of white hair; on back there are black bristly hairs, yellow tomentum and white scales on hind borders, more numerous towards tip; on sides of second to fifth segments there are large tufts of black flattened hairs, like those of *Sp. punctipenne*, namely larger tufts on second and third, and smaller ones on fourth and fifth, alternating with tufts of broad and long argenteous scales. Venter black, grey dusted, yellow tomentose, with median longitudinal stripe of white scales, and with long dark greyish hair. ♂ genitalia red, with lower plate black-fringed; ♀ tuft luteous. Legs with coxae and femora black, tibiae and base of tarsi reddish-yellow; hair on coxae whitish above and black beneath; femora with yellowish, tibiae with white scales; spines black, on front femora one or two, on middle pair five or six, on hind pairs a complete row of nine or ten; front tarsi in ♀ clothed with soft hairs, but not dilated; claws black; pulvilli brown. Wings hyaline, with a blackish pattern, consisting of numerous irregular spots, which are in part confluent; extreme base black, but costal cell hyaline beyond humeral cross-vein. Along fore border there are five larger spots, as follows: one at base of fourth longitudinal vein below humeral cross-vein; one at base of the third vein, forming an abbreviated, broad band, which reaches base of fourth posterior cell; one on middle cross-vein, forming a second and smaller band extending to first vein alone; one at base of vein dividing first submarginal cell from second, extending above to first vein; finally a spot at base of upper branch of cubital fork, extending above so as to fill up end of marginal cell, and including here a hyaline, rounded spot. On terminal half of upper branch of cubital fork there is a broad spot just beyond middle bend, prolonged as a narrow border to the end. Apical cross-vein of discoidal cell with a broad elongate spot; extreme base of third posterior cell with a narrow spot; another spot before middle

of anal cell, crossing last vein and ending at base of axillary lobe. Less distinct and smaller fuscous spots are to be seen at tips of veins ending in middle part of hind border of wing. Discoidal cell for most part hyaline; but from its narrowly infuscated base a dark line passes over spot situate below middle cross-vein. Alula rather small, faintly infuscated, with pale fringe. Basal hook yellow; basal comb black, small, yellowish tomentose. Second longitudinal vein originating a considerable distance before middle cross-vein, with a long stump on its basal angle, and with a rather deep loop at tip; vein dividing first submarginal cell from second much longer than in *Sp. ocyale*; upper branch of cubital fork, beyond rounded middle bend, again curved inwards; first posterior cell somewhat narrowed at end; middle cross-vein situate a little before middle of discoidal cell, which is nearly thrice as long as the rather short and broad second posterior cell, its lower vein being strongly curved in middle, so that discoidal cell becomes much broader before its end; anal cell about as narrow at end as first posterior cell, or only a little narrower. Veins black, dark brownish at base; praediscoidal spot grey.

NOTE.—One of the specimens from Kenya, though typical in other respects, has the wing-pattern less developed, the dark spots being smaller, in part incomplete and not confluent; the end of the marginal cell is almost wholly hyaline, the dark spot being indicated only by a faint shade on its upper border.

Genus 24. **DICRANOCLISTA**, gen. nov.

This new genus is founded upon a strikingly coloured Anthracine which also possesses a very peculiar venation. The more noticeable characters of the latter are to be found in a closed and stalked first posterior cell, and in a cross-vein uniting the two branches of the cubital fork, as in *Hyperalonia*. The first of these peculiarities is very rare in the Anthracinae, being found only in *Anthracamoeba obscura*, Sack, in which, moreover, it is subject to great variation. The second character is unique in the tribe, although, as an abnormality, a similar thing has been observed by Brunetti (*Rec. Ind. Museum*, III, p. 221, 1909) in the Indian *Argyramoeba duvaucelii*, Macquart, or at least in the species which is redescribed under this name; this species, however, is very differently organised.

An extremely interesting fact is that in the Californian *Spongostylum vandykei*, Coquillett (1894), we have perhaps a congeneric form; but I do not know this species in nature, and there are no figures of it. The coloration of the wings seems to be very similar, but the first posterior cell appears to be open. Williston in 1896 founded for Coquillett's species the new genus *Coquillettia*; but since this name is preoccupied in insects by Uhler, 1891, and since Williston in 1908 omitted to propose a substitute for

it, the designation here employed is valid, even if the two species be congeneric.

The principal structural features of the new genus (or at least of the genotype) are as follows :—

Body destitute of scales, or only on legs with a few distinct ones. Head globular, as broad as thorax. Occiput well developed, bilobate above, with a deep postvertical furrow; ocellar tubercle very small, globular, with three distinct and approximate ocelli. Frons in ♂ rather narrow at vertex, as broad as one-seventh of head, but becoming gradually broader anteriorly, and thus near antennae being one-third of head; vertex rather depressed. Eyes bare, with uniformly small facets, reniform, deeply indented on hind border and with distinct bisecting line. Face short, not prominent, with a mystax limited to lower half, and bearing some scales on upper half; mouth opening small; proboscis short, thick, with broad terminal labella. Antennae very short, rather wide apart at base; first joint short, with short hairs; second joint cup-like; third joint globular, without projecting border, its styloform part thick and short, bisected beyond middle, and with a short terminal pencil. Thorax clothed with soft hair of uniform length, and with somewhat weak lateral macrochaetae; metapleura bare. Scutellum rounded, with weak bristles on hind border. Squamae and plumula densely fringed with simple hairs. Abdomen oval, rather pointed behind, as broad as thorax at base, clothed with soft hair of uniform length, without differentiated tufts on sides, and absolutely devoid of bristles. ♂ genitalia rather strongly developed, prominent, symmetrically placed, bilobate, with lower lamella of considerable size. Legs rather short, with spinose femora and tibiae; pulvilli well developed; claws simple, not toothed. Wings short, broad at base and narrow at tip, with strong basal hook and well-developed basal comb; alula very long, rounded, with short fringe of simple hair; wing-membrane wrinkled. First longitudinal vein long; second originating opposite middle cross-vein, with a long stump on basal angle, then straight, and broadly but slightly looped at end. Upper branch of cubital fork angularly bent at base, and there with a long recurrent stump; bent again in middle at an obtuse angle, and beyond this straight to end; from middle angle starts an oblique cross-vein, which reaches lower branch of fork before its end, thus forming a closed rectangular cell (whence the generic name). Middle cross-vein situate before middle of discoidal cell; first posterior cell broad in middle, and closed a considerable distance before reaching wing-margin. Discoidal cell twice as long as broadly triangular second posterior cell, its upper vein strongly arched distally, while distal portion of lower one is practically straight; terminal cross-vein much shorter than usual, therefore discoidal cell more acute at end than in any other representative of this subfamily. Second

basal cell very broad, even a little broader than discoidal cell; anal cell narrowly open. Axillary lobe very short, and much broader than usual.

Genotype: the following new species.

144. *Dicranoelista simpsoni*, sp. nov.

A shining black, pale yellowish-haired species looking like a small *Eristalis*, with a broad yellow spot on each side of the abdomen, and with yellow, brown-spotted base to the wing.

Type ♂, from the Gambia, Jalokunda, 17 March, 1911, a very important discovery of *Dr. J. J. Simpson's*, in whose honour this magnificent species (presented to the British Museum by the Imperial Bureau of Entomology) is named.

♂. Length of body 10.5 mm.; length of wing 9 mm.; wing-expanse 22 mm.

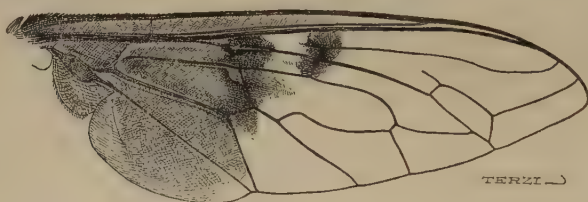


FIG. 16.—*Dicranoelista simpsoni*, sp. nov. Wing of ♂. $\times 8$.

Head black, somewhat shining; occiput with short pale yellowish hairs, and with white scales near eyes, at posterior indentation; ocellar tubercle dark brownish, yellow-haired; frons with black erect hairs, with some yellowish ones above, and with whitish scales, which are very dense above antennae; face with yellowish hairs, but with black ones intermingled, and with dense whitish scales on upper half. Antennae entirely black; first joint with pale yellowish hairs. Proboscis black. Thorax and scutellum shining black, entirely clothed with pale yellowish hair of uniform length; bristles yellow; pleurae shining black, clothed with hair like that on back. Squamae pale yellowish, with yellowish fringe; plumula whitish; halteres pale yellow, with whitish knobs. Abdomen shining black; on each side there is a broad, oval, yellow spot extending from base of second to end of fifth segment; all hair of equal length, pale yellowish, but from anterior border of third segment to tip black part is clothed with black hair, thus forming an elongate patch. Genitalia dark reddish-brown, black-haired; venter yellow and yellowish-haired, with a black spot at end. Coxae and femora black; tibiae and tarsi at base dark reddish; hair on coxae whitish, that on femora black; femora with rather long, erect, blackish scales, and black, weak, short spines, hind pair having a row of six or seven spines; spicules on tibiae

black, those on front pair very small; hind tibiae with some pale scales; claws black; pulvilli dirty greyish. Wings, hyaline, vitreous, iridescent, with first vein bright yellow, remaining veins darkened distally. Basal hook pale yellow; basal comb black. Yellow pattern at base of wing occupies entire costal cell, base of first basal cell, whole of second basal cell, anal cell and axillary lobe; from base of third longitudinal vein runs an abbreviated brown band, which ends at base of fourth posterior cell; on base of second vein and on middle cross-vein there is a broad brown spot, extending from first to fourth vein; praediscoidal spot grey, less distinct; discoidal cell only a little darkened at extreme base; alula yellow, with pale yellowish fringe. Limit between yellow and hyaline part of wings well marked, forming a perpendicular line from brown basal spot to end of anal cell.

Subfamily IX. *EXOPROSOPINAE*.

Genus 25. *VILLA*, Lioy (1864).

The species of the present genus are more closely allied to those of *Hemipenthes* than to those of *Thyridanthrax*; but of the first of these two genera there are no species in the Ethiopian fauna, while the species of *Villa* are rather numerous. Some of these are very closely allied to European or Mediterranean species, and have perhaps been mistaken for them; thus *V. hottentota* and *V. circumdata* have been recorded from the Ethiopian Region, but, as I think, wrongly.

Regarding the distinction of the present genus from *Thyridanthrax*, care must be taken not to limit the attention to the character of the wing-pattern alone: there are true species of *Villa* with a rather extensive wing-pattern, like *V. leucochila* (= *leucostoma*, Wied. nec Meig.); and there are many species of *Thyridanthrax*, like *Th. lloydi*, *Th. vagans*, etc., with entirely hyaline wings. Even the character of the rounded face may lead to mistakes; it is true that in some forms of *Thyridanthrax* the face is not conically produced, but nevertheless it is never so rounded as in *Villa*, being somewhat prominent or bluntly convex. I have therefore adopted as the main distinctive character that of the front tibiae, which are beset with short spicules in *Villa* (and also in *Hemipenthes*) and are completely smooth in *Thyridanthrax*. I am aware that there are some species of *Villa* with smooth tibiae; but so far as known, and as was previously pointed out by Osten Sacken, such species are exclusively American (*V. lateralis*, Say, and its allies). As regards Ethiopian species, if attention be given to the combination of the above characters in subordination to the character of the front tibiae, no doubt can arise concerning the distinction of a *Villa* from a *Thyridanthrax*.

The species of *Villa* known to me in nature can be distinguished as follows:—

- 1 (24). Wings without a definite pattern, or entirely hyaline, or only with a blackish base or with infuscated costal cells.
- 2 (17). Wings entirely hyaline, even along fore border, only narrowly yellowish or blackish at base; thoracic bristles yellow; species of medium size.
- 3 (14). Antennae with styliform part of third joint very thin and slender almost filiform.
- 4 (9). Abdomen without black tufts on sides of middle segments (second and third); face without black hairs; wings with pale yellowish base, and mainly yellow veins.
- 5 (8). Abdomen without distinct black tufts on sides at end; wings of ♂ with two argenteous patches at base.
- 6 (7). Legs with fulvous femora; abdomen even on sides with short hairs. *flavipes*, Loew.
- 7 (6). Legs with black femora; abdomen with long hairs chiefly on sides. *albescens*, Loew.
- 8 (5). Abdomen with small tufts of black hairs on sides of fifth and sixth segments; wings of ♂ with a single argenteous patch at base, patagium being less distinct; legs black, with yellow scales. ... *sexfasciata*, Wied.
- 9 (4). Abdomen with dense tufts of long black scales on sides of middle segments; face with more or less abundant black hairs; wings with blackish base and black veins, and in ♂ with two argenteous basal patches.
- 10 (13). Femora broadly yellow at base.
- 11 (12). White abdominal bands formed by white, not shining scales; tip of abdomen with alternating black and white tufts. *vitripennis*, Loew.
- 12 (11). White abdominal bands formed by glistening argenteous scales; tip of abdomen entirely clothed with glistening argenteous scales. *argentina*, Bezzi.
- 13 (10). Femora entirely black, and with fairly abundant yellow scales; tip of abdomen with alternating black and white tufts. *paniscoides*, Bezzi.
- 14 (3). Styliform part of third antennal joint rather thick and strong, not filiform; abdomen without black tufts on sides of middle segments; legs black, femora with black scales on anterior, and white ones on posterior side; wings with pale yellowish base and black veins, in ♂ devoid of argenteous basal patches.
- 15 (16). Smaller species; squamae white; body clothed with mostly white hairs. *validicornis*, sp. nov.
- 16 (15). Larger species; squamae brown; body clothed with golden-coloured hair. *chrysothrix*, sp. nov.
- 17 (2). Wings yellowish or blackish at base and along fore border.
- 18 (21). Frons clothed with well-developed yellowish scales, at least anteriorly.
- 19 (20). Legs mainly reddish, or at least densely clothed with reddish scales; abdomen with less developed cross-bands.
- a (b). Squamae pale brown; thoracic macrochaetae yellow; abdomen with red basal spots on sides, and without lateral black tufts on middle segments; wings with base and costal cells yellowish-brown. *lasia*, Wied.
- b (a). Squamae deep black; macrochaetae black; abdomen entirely black, and with broad tufts of black scales on sides of middle segments; wings with base and costal cells blackish-brown. ... *atrisquama*, sp. nov.
- 20 (19). Legs quite black; abdomen with well-developed cross-bands of yellowish tomentum, and with black lateral tufts on sides of last segments. *sexfasciata*, Wied.

- 21 (18). Frons entirely black-haired and black-scaled; legs black, and mainly black-scaled; abdomen with four or five complete, white cross-bands.
- 22 (23). Propleural tuft and front coxae with deep black hairs; pleurae and venter black-haired; hind tibiae with short, dense hair, and with scattered scales; wings quite hyaline. *phaeotaenia*, Bezzi.
- 23 (22). Propleural tuft and front coxae with yellowish hairs, like pleurae and venter; hind tibiae pectinate, but devoid of scales; wings with a faint but distinct brown-yellowish tinge. *bravae*, Bezzi.
- 24 (1). Wings with a definite blackish or brownish pattern, extending over both basal cells, or even further.
- 25 (26). Wing with dark pattern sharply defined, and completely filling both basal cells; face white-haired; squamae black, white-fringed; abdomen with two white bands, and with scaly black hairs in middle of sides; legs yellow. *leucocchila*, nom. nov.
- 26 (25). Wings with dark pattern not sharply defined, but extending even over base of discoidal, of fourth posterior and of anal cell, which each have a clear centre like second basal cell; face black-haired; squamae yellowish, with a dark fringe; abdomen in middle entirely clothed with snow-white scales; legs black. *candidata*, sp. nov.

145. *Villa albescens*, Loew (1860).

A small, delicate species, easily recognisable on account of the long and entirely white hair on the sides of the abdomen, and the wings, which have yellow veins and pale yellowish base.

This species seems to be widely distributed in the Ethiopian Region; originally described from the Cape, it was subsequently recorded from S. Nigeria. It is very like the Mediterranean *V. ixion*, Fabr. In the British Museum there is a specimen from the Cape, from the old W. W. Saunders collection: in addition, presented by the Imperial Bureau of Entomology, there are a ♂ from Nyasaland, R. Chigolo, Marimba, 18 June, 1912 (*J. G. Morgan*); a denuded ♀ from Kenya Colony, Tmbi, 1 October, 1911 (*R. J. Stordy*); and a ♀ from N. Nigeria, Zungeru, November, 1911 (*Dr. J. W. Scott Macfie*).

146. *Villa sexfasciata*, Wiedemann (1821).

Closely allied to the preceding species, but distinguished by the small but distinct tuft of black hair at the tip of the abdomen, by the more yellow-scaled legs, and by the less-developed patagia at the base of the wings.

Wiedemann described the present species from the Cape, and Saint-Fargeau Serville and Walker recorded it from South Africa. I believe that Loew described the ♀ of this species from the Cape, under the name *A. flavescens*; and I have myself recorded it from Nyasa under the latter name.

The British Museum possesses (presented by the Imperial Bureau) a ♂ from Nyasaland, Mt. Mlanje, 18 October, 1912 (*Dr. S. A. Neave*); a ♀ from N. Rhodesia, 4 September, 1913 (*R. C. Wood*); and another ♀ from Nyasaland, Zomba (*Dr. H. S. Stannus*). In addition there are a ♀ from Belgian Congo, 150–200 miles W. of Kambove, 3,500–4,500 ft., 30 January,

1907 (*Dr. S. A. Neave*); and a couple of specimens from Mauritius (the late *Lt.-Col. N. Manders*), the ♂ measuring 5.5 mm. in length, and the ♀ 14 mm.

These latter specimens are referred to the present species, but some allied species have been recorded from the Mascarene Islands, like *V. unifasciata*, Macq., *V. ruficeps*, Macq., and *V. leptopus*, Thoms., which, however, seems to be different.

In *V. sexfasciata* the costal cells are sometimes infuscated.

147. *Villa vitripennis*, Loew (1860).

Allied to the two preceding species, but at once distinguished by the large black tufts of scales on the sides of the middle abdominal segments, and by the black base and black veins of the wings.

This species which was described and figured from the Cape and Caffraria by Loew, has never been recorded subsequently; but, like the allied species, it seems to have a wide distribution. In the British Museum (presented by the Imperial Bureau) there are specimens from Kenya Colony, Nakuru, January, 1913 (*Dr. B. L. Van Someren*), and Marsabit, 18 September, 1911 (*R. J. Stordy*); and a ♀ from N. Rhodesia, Chilanga, 19 April, 1913, "settled on path" (*R. C. Wood*); a long series of specimens from Abyssinia, November, 1911 (*R. J. Stordy*) may be considered as belonging here.

148. *Villa paniscoides*, Bezzi (1912).

Closely allied to the preceding and perhaps only a variety of it, distinguished by the entirely black femora, which have fewer scales. Of this species, of which the type was obtained in North Nyasa, the British Museum possesses (presented by the Imperial Bureau): a ♂ from Kenya Colony, Marsabit, 20 September, 1911 (*R. J. Stordy*); a ♀ from Nyasaland, Mt. Mlanje, 18 November, 1912 (*Dr. S. A. Neave*), this specimen being a little smaller, measuring only 9 mm. in length, and having the face entirely clothed with black hair; and some specimens of both sexes from Kenya Colony, Kabete (*T. J. Anderson*), and Nyasaland, Zomba (*Dr. H. S. Stannus*). There are also additional examples from Abyssinia (*R. J. Stordy*), and Kenya Colony, around Marsabit, October, 1919 (*Dr. S. A. Neave*).

149. *Villa validicornis*, sp. nov.

A small species, with entirely hyaline, black-veined wings, distinguished by the stout and rather thick, not filiform, styli-form part of the third antennal joint.

Type ♂ and type ♀, from Nyasaland, Mt. Mlanje, 7. and 9 December, 1912 (*Dr. S. A. Neave*).

♂♀. Length of body 8-9 mm.; length of wing 8-9 mm.

Head black; occiput rather shining, bare, with short, pale

yellowish fringe on margin of middle cavity, and with snow-white scales on eye-borders, below indentation; postvertical furrow broad and deep, with ocellar tubercle situate in front of it; ocellar tubercle oval, broad, black, not very prominent, with some black hairs. Frons in ♂ very narrow at vertex, only a little broader than ocellar tubercle, gradually widening towards antennae and there about one-fourth of total breadth of head; frons in ♀ about twice as broad as that of ♂, and more shining; frons in both sexes clothed with erect black hair, and near antennae with scattered white scales. Face in profile not prominent, rounded, flat, clothed with white and black hair, former more abundant on sides and above, latter in middle and below; facial hair stouter, more rigid and more abundant in ♂ than in ♀. Eyes dark reddish, with equal facets in both sexes. Antennae entirely black; first joint rather short, in ♂ with entirely black, in ♀ with whitish rigid hairs beneath; third joint very shortly conical, grey dusted, with styliform part not filiform, stout and thick, gradually tapering to a point, but without terminal style; in shape this joint somewhat resembles corresponding joint in *Thyridanthrax*, but it is always much more slender. Proboscis short and thick, entirely black; palpi long, curved upwards, black, with long black hairs. Thorax and scutellum black, dark grey dusted, dull or very slightly shining, clothed with pale yellowish hair of equal length; bristles wanting in typical specimens, but those on hind border of scutellum black; pleurae grey dusted, whitish pilose, with white scaly tomentum on mesopleura and on upper part of sternopleura; metapleural tuft dense, whitish; squamae white, with yellow border and fringe of white scales; halteres yellow, with paler knobs. Abdomen black, rather shining, with sides of first and second segments red, more narrowly in ♀; abdomen clothed with black and pale yellowish tomentum, latter forming narrow interrupted bands on fore borders of second, third, fourth, and seventh segments; hair long and whitish, but becoming shorter beyond hind border of third segment, while on hind borders of third, fifth and sixth segments there are black hairs on sides forming inconspicuous tufts; the seventh segment in ♂ apparently entirely clothed with long white hairs. Venter black, with white scales and white hairs; ♂ genitalia black, reddish at end; spines on ovipositor long, reddish-yellow, and hooked at end. Legs entirely black; middle and posterior femora anteriorly with black scales, and posteriorly with whitish ones; coxae with white and black hair; all spines and spicules black, those on front tibiae short but distinct; front femora unarmed, middle femora with two strong spines in middle on anterior side, hind femora with two or three spines beneath near tip; claws black, those of front legs very small; no distinct pulvilli. Wings hyaline, vitreous, smooth, with strong iridescent reflexions, only somewhat pale yellowish near base in middle; ♂ without distinct

basal patagium; comb black and black-scaled in both sexes; basal hook brown, very long and thin; alula hyaline, fringed with white scales; veins black, first and fifth yellow at base. Venation normal; second vein originating just before or opposite to middle cross-vein, and moderately looped at end; upper branch of the cubital fork long, widely divergent from main stem at base, deeply sinuate in middle; first posterior cell not narrowed at end, second posterior cell narrow and long; discoidal cell narrow and long, with middle cross-vein situate before its middle, and vein dividing it from third posterior cell **S**-shaped and about twice as long as that dividing it from fourth posterior cell; anal cell rather broadly open; axillary lobe short and broad.

150. *Villa chrysothrix*, sp. nov.

Closely allied to the preceding species, but distinguished by its greater size, and by the golden colour of the pubescence and of the scaly tomentum.

Type ♀ from N.-W. Rhodesia, Chilanga, 15 December, 1913, 4,000 ft., "on damp ground" (*R. C. Wood*).

♀. Length of body 10·5–11 mm.; length of wing 10·5–11 mm.

Head as in foregoing species, but occiput with distinct short black hair above, and with central fringe bright yellow; face with short, white hairs, only in middle line with a few black ones; antennae as in *V. validicornis*. Thorax clothed with dense golden tomentum and dense golden hair; tomentum in middle of anterior portion black, and in front of scutellum a striking, broad, transverse band of golden tomentum; praealar and postalar bristles bright yellow. Scutellum black, with black tomentum in middle, golden tomentum on hind border and black bristles. Pleurae above with dense golden tufts, in middle and below with white hair; metapleural tuft golden. Squamae pale brown, with white fringe; halteres as in *V. validicornis*. Abdomen as in *V. validicornis*; but hairs, even on sides of first segment, yellow; tomentum forming transverse bands also yellow, but in middle of segments there is black tomentum, spines on ovipositor black, with reddish base; venter black, white tomentose and white-haired. Legs as in *V. validicornis*; wings likewise, but veins thicker and more intensely black, even at base of first and fifth veins; basal comb proximally with a little golden tomentum, and fairly well developed, like deep black hook.

151. *Villa lasia*, Wiedemann (1824).

A species of considerable size, very near *V. hottentotta*, L., from which it is distinguished by the frons in the ♀ being somewhat broader, by the red colour of the scutellum, by the presence of broad red spots on the sides of the abdomen, by reddish legs and by the coloured anterior border of the wings being a little deeper in tone.

The type of *V. lasia* was obtained at the Cape of Good Hope, and the species was subsequently recorded from South Africa by Saint-Fargeau Serville and Walker. Wiedemann described the ♂, giving the length as 5 lines; the specimens in the British Museum measure 13–14 mm., and I have seen others of even larger size. The examples before me consist of four ♀♀ from Kenya Colony, Njoro, Marsabit, 14 April, 1911 (*Dr. G. R. H. Chell*); Kenya Colony (*R. J. Stordy*); and S. Abyssinia, November, 1911 (*same collector*). The ♀ appears to have distinct transverse bands on the abdomen, from the second to the sixth segments; these bands, especially those on the second and third segments, are narrowed in the middle.

152. *Villa atrisquama*, sp. nov.

Allied to the preceding species, but distinguished by the more intense black colour of the base and fore border of the wings, and by the large tufts of black scales on the sides of the median abdominal segments.

Type ♂, type ♀, and several additional specimens from Abyssinia, November, 1911 (*R. J. Stordy*); one ♀ from Kenya Colony, Nairobi, April 27, 1911 (*T. J. Anderson*).

♂♀. Length of body 10–12 mm.; length of wing 10–12 mm.

Head black; occiput above with short black hair, with pale yellowish fringe and with white scales on eye-borders below indentation; postvertical furrow not very deep; ocellar tubercle black, small, rounded, with black hairs. Frons of ♀ narrow, about twice as broad as ocellar tubercle at vertex, entirely clothed with black erect hair, and with yellowish scales in front near antennae. Face entirely clothed with yellowish hair and scales of same colour. Antennae injured in case of typical specimens, only first and second joints remaining; these joints are black, first being a little longer than second, with black hairs above and yellow ones below and on inner side; proboscis and palpi black. Thorax and scutellum entirely black, dull, clothed with fulvous or pale yellowish hair, and with yellow and black tomentum; bristles black, or only one of postalar with yellowish tip; pleurae with hair like that on back, except that on sides of collar and on upper border of mesopleura there are some black hairs; dense metapleural tuft likewise fulvous or whitish. Squamae intensely black, with yellowish or whitish, scaly fringe; halteres yellow, with paler knobs. Abdomen black, with black tomentum, but apparently on second and third segments there are transverse bands of yellowish tomentum; hair whitish or yellowish on sides of first segment and on part of second; on sides of rest of second and on third segment there is a broad tuft of long black scales; fourth segment with white or yellowish scales and hair; fifth and sixth segments with tufts of black scales; at tip there are two tufts of white scales, with a black tuft in middle between them. Spines on ovipositor black;

♂ genitalia black with reddish tip; venter black, with white scales and whitish or yellowish hair. Legs with dark reddish femora and tibiae, former being black at tip, latter black at tip and posteriorly; coxae and tarsi black, former with whitish or yellowish hair; scales on femora whitish or yellowish; spines black, middle femora with three, hind femora with three or four; front tibiae with distinct spicules; claws black; no distinct pulvilli. Wings hyaline, iridescent; base as far as basal and humeral cross-veins intensely black; second costal cell blackish, but becoming clear towards end; basal comb black and of considerable size, in ♂ with argenteous, in ♀ with yellowish or dirty whitish scales; basal hook black, long, thin, spine-like; alula brownish or yellowish, with whitish, scaly fringe. Veins black, with normal disposition; contact of discoidal cell with fourth posterior cell only one-third as long as its contact with third posterior cell; anal cell broadly open; axillary lobe short and broad; first basal cell sometimes a little blackened at base.

153. *Villa leucochila*, nom. nov.

A species very distinct from any other of its genus, on account of the very extensive basomarginal infuscation of the wings.

Wiedemann described the present species in 1821, from the Cape of Good Hope, under the name *Anthrax leucostoma*; but in the previous year Meigen characterised a species from Europe under the same name; a new name is therefore necessary for the former, inasmuch as both belong to the same genus. Both Saint-Fargeau Serville and Walker recorded the species from South Africa, and Loew reported it from the Cape and from Caffraria, giving a complete redescription, with figures. The species thus seems to be exclusively South African.

In the British Museum there are a number of specimens of both sexes from Natal, Willow Grange, Mooi River, September-October, 1913 (the late *R. C. Wroughton*).

154. *Villa candida*, sp. nov.

A smallish, aberrant species, characterised by its white-scaled abdomen, and by the basal half of the wings being suffused with a dark brownish tinge, with clear spaces in the centre of the cells.

Type ♂, a damaged specimen from Sierra Leone, Kamatoto, 16 April, 1912 (*Dr. J. J. Simpson*). The front legs are wanting in the case of the type, but other characters (antennae, proboscis, face, etc.) are undoubtedly those of a *Villa*, and not of a *Thyrid-anthrax*; on the contrary, the coloration of the wings is more suggestive of the latter genus.

♂. Length of body 7 mm.; length of wing 6.5 mm.

Head black; occiput proportionally short, with short black hair and short fringe, and, as it seems, devoid of white scales on the eye-border. Frons clothed with black hair, and with a few dark scales near antennae; face rounded, not prominent

in profile, entirely clothed with black hair and with sparse dark scales. Antennae entirely black; first joint short, black-haired; third joint globular, shortly conical, with thin styliform part and terminal bristle. Proboscis black, short and thick, with fleshy labella. Thorax and scutellum entirely black, dull, in middle with black tomentum, on sides and posteriorly with white tomentum; a notopleural stripe of white hair, like that which may be observed in many species of *Thyridanthrax*; bristles black; pleurae black, with dark hairs above and white ones beneath; metapleural tuft dense and white; squamae pale brownish, with dark fringe; halteres yellow. Abdomen black, but with first segment narrowly red on sides; first segment black tomentose, only on hind border and on sides with white tomentum; second, third and fourth segments entirely clothed with snow-white, not glistening, scaly tomentum; fifth segment black tomentose and black-haired, with hind border pale yellowish and white tomentose; sixth segment pale yellowish, and white-scaled; venter in case of type concealed between ventral borders of tergites, which approach each other in middle line. Legs entirely black, black spinose and black-haired; scales dark, only femora near base beneath with a few whitish scales; spines on femora but little developed, middle pair with one, hind pair with one or two spines; claws black; pulvilli wanting. Wings hyaline, smooth, iridescent; termination of basal blackish infuscation following a line commencing at end of auxiliary vein, and passing over middle cross-vein and middle of discoidal cell to end of anal cell; this line, however, not sharply defined; in centre of second basal cell, of anal cell, of infuscated base of discoidal and of fourth posterior cell, there is in each case an oval, hyaline spot; broad and short axillary lobe also infuscated, but with a very broad clear central spot. Basal comb black and small; alula blackish, with dark fringe. Veins black; second longitudinal vein originating immediately above or a little beyond middle cross-vein and with a shallow dip at end; first posterior cell not narrowed at tip; discoidal cell broad, about one and a half times as long as second posterior cell, with middle cross-vein situate before its middle; third posterior cell long, its contact with discoidal cell S-shaped, and a little less than thrice as long as straight contact of discoidal cell with fourth posterior cell; anal cell narrowly open; cubital fork of normal shape.

Genus 26. OESTRANTHRAX, Bezzi.

This new genus is established by me in my report on the Bombyliidae of the Alluaud-Jeannel Expedition, for a species from East Africa very closely allied to the South African *Anthrax obesus* of Loew, which may be taken as the genotype. While agreeing in most characters with *Villa*, the new genus is dis-

tinguished by certain peculiarities, indicating undoubtedly a high degree of specialisation in parasitical habits. These characters, like reduction of the mouth-parts and of the mouth opening (with the consequent development of the facial plate), reduction of the macrochaetae and wings, are the same as those exhibited in the genus *Adersia* among the Tabanidae, or in numerous Muscoid genera belonging to the so-called Oestridae or to the Trixinae. The generic name proposed makes allusion to this fact.

The main characters of the genus may be summarised as follows:—

Head globular, with occiput well developed and bilobate above; postvertical furrow short; ocellar tubercle small, prominent, with three closely approximate ocelli. Frons narrowed at vertex, where it is only one-seventh of width of head, gradually broadening forwards and thus near antennae occupying one-third of head. Facial plate very broad and long, gently curved, somewhat prominent in profile, pubescent and about as long as frons, and separated from rather broad and rather bare jowls by a deep furrow. Mouth opening therefore reduced to a narrow, short, ovate depression, into which rudimentary proboscis is retracted; palpi very short, but distinct. Antennae short, widely separate at base, inserted above middle line of eyes; first joint pilose, a little longer than second; third joint smaller than second, short, globular and quickly attenuated into a long filiform style, which is as long as remainder of antenna and ends in a microscopic bristle. Eyes bare, narrow, reniform, much higher than broad, with posterior indentation rather wide and shallow, but with a distinct bisecting line. Thorax rectangular, subrotundate in front, with short pubescence even on pleurae, and devoid of macrochaetae; metapleural tuft well developed and dense. Squamae broad, with scaly fringe; halteres exposed. Scutellum broad and convex, devoid of bristles on hind border. Abdomen bluntly oval, as broad as thorax, with seven distinct segments, short pubescence and no bristles at all. Legs relatively short; front tibiae with distinct and numerous spicules; front femora unarmed, those of middle and hind legs with some very short spines; front tarsi but little pilose, with long claws, but without pulvilli. Wings short, with spiniform basal hook, and with broad basal comb; alula rounded, but rather small and with scaly fringe; axillary lobe broad and short. Veins thick; first longitudinal rather short; second short, originating opposite or a little before middle cross-vein, straight, with terminal dip very little developed; cubital fork regular, with upper branch strongly curved in middle; first posterior cell not contracted at end, but its basal half narrowed; second posterior cell variable in length; third posterior cell rather short and obtuse, its contact with discoidal cell a little less than twice as long as contact of fourth posterior cell with latter; discoidal

cell broad and short, but twice as long as small second posterior cell, and with middle cross-vein situate in middle of its upper boundary; second basal cell dilated, about as broad as discoidal cell or a little narrower; anal cell very narrowly open, or even closed on wing-margin; ambient vein complete. Wing-membrane smooth. Upper branch of cubital fork and base of third posterior cell often with appendix.

Genotype: *Anthrax obesus*, Loew (1863).

The two known species may be distinguished as follows:—

- 1 (2). Larger species; antennae, including style, entirely reddish-yellow; discoidal cell with appendix, twice as long as short second posterior cell; first posterior cell greatly narrowed in basal half. . . *obesus*, Loew.
- 2 (1). Smaller species; last two joints of antennae, including style, entirely black; discoidal cell without appendix, and about as long as long second posterior cell; first posterior cell less narrowed at base.
speiserianus, sp. nov.

155. *Oestranthrax obesus*, Loew (1863).

A predominantly reddish and by no means hairy species, in which the hyaline wings have brownish bases and brownish fore borders. Loew described the ♀ from the Orange Free State, giving a length of $9\frac{1}{2}$ lines for the body, and $7\frac{3}{4}$ lines for the wing. In the British Museum there are two ♂♂ from N. Rhodesia, 40 miles S. of Broken Hill, 23 October, 1912 (*F. V. Bruce-Miller*), which measure only 12–13 mm. in length, while the wing is 9.5–10.5 mm. long; in other respects, however, they answer very well to Loew's brief diagnosis, except that the appendix on the upper branch of the cubital fork is wanting. A complete description of this interesting insect is appended.

Head entirely reddish-yellow, only a little blackened near vertex; short hair in middle of occiput above pale yellowish, that on frons black, and that on facial plate pale yellowish; hair on first antennal joint mainly yellow, with only a few black hairs on upper side; antennae and rudimentary proboscis entirely yellowish; frons at vertex twice as broad as ocellar tubercle. Thorax black on disc, broadly reddish on sides and in front, clothed in middle with black, and on sides with reddish tomentum, but on disc there are three indistinct longitudinal stripes of reddish tomentum; short hair on sides and forming collar fulvous; in front of scutellum is a broad transverse band of reddish tomentum. Pleurae entirely reddish, with pale yellowish or whitish hair; metapleural tuft whitish. Squamae pale brownish, with short, dirty whitish fringe; halteres yellow, with whitish knobs. Scutellum entirely reddish, with black tomentum at base and in middle, and with yellowish tomentum on sides and behind. Abdomen entirely reddish, only middle of first segment and a median spot on second being black; abdomen with short, pale yellowish hair on sides of first segment, which has also yellowish tomentum on hind border; second

segment with narrow basal band of yellow tomentum, and broad posterior band of black tomentum; third segment with narrow black tomentose band on hind border; remaining segments with much less distinct bands; yellowish tomentum predominant on last two segments; sides, except those of first segment, almost bare; venter entirely reddish-yellow, with whitish scaly tomentum and short whitish hair at base; genitalia red, with short pale yellowish hair. Legs entirely reddish, with black spines and pale yellowish scales; claws red, with black tips; short spines on femora two or three in number on last two pairs; coxae red, with short pale yellowish hair. Wings hyaline, iridescent, base, costal cells, base of marginal and whole of first basal cell brownish-yellow; basal hook and basal comb yellow; alula infuscated, with grey fringe. Veins yellow; second posterior cell very short, basal half of first posterior cell not broader than length of middle cross-vein; upper branch of the cubital fork without appendix.

Genus 27. **THYRIDANTHRAX**, Osten Sacken (1886).

This genus is employed here in a much wider sense than that assigned to it by its author, and by subsequent writers. Following the procedure adopted by me in 1912, I include in the genus not only the *Th. fenestratus* group, which is typical,* but also the *Th. vagans* and *Th. afer* groups as well. The distinction of *Thyridanthrax* from *Villa* is easy, as already stated above. This method of procedure, however, is merely provisional, since increased knowledge, especially from a biological standpoint, will certainly lead to the erection of additional genera.

The species known from the Ethiopian Region may be divided into the following four groups.

1. Species with almost entirely hyaline wings. In these species the face is very often neither conical nor markedly prominent, but on the other hand bluntly convex. This group is an important one, since it contains a parasite of *Glossina*, *Th. lloydi*, Austen, which was described as a *Villa*. For the Palaearctic species of the present group, Becker, in 1916 (*Ann. Mus. Nat. Hung.*, XIV, p. 44), proposed a new subgenus under the name *Exhyalanthrax* with *A. vagans*, Loew, as type. Ten Mediterranean forms of this group, in all of which, however, the face is conically produced, were distinguished by Becker.

2. Species with an extensive wing-pattern and usually with a conically prominent face, forming the *Th. afer* group. This group likewise includes a parasite of *Glossina*, *Th. abruptus*, Loew.

In each of these groups there are species in which the third posterior cell is short, and others in which it is long, the contact between this cell and the discoidal cell being more or less long.

* Coquillett stated in 1910 that the type of the genus is the North American *A. selene*, O.S., but in this I think he was mistaken.

This character is subject to great variation within the genus, and has evidently no generic value; thus the American genus *Lepidanthrax* appears to be of very doubtful validity.

3. An aberrant species, *Th. inauratus*, in which the body shows a very peculiar coloration. In the wings being partly black, partly hyaline, in the form of the discoidal cell, etc., this group resembles *Hemipenthes*; but the antennae, proboscis and front tibiae are as in true *Thyridanthrax*.

4. The *Th. fenestratus* group, the species of which are parasitic in the egg-cases of locusts, as was first observed by Künckel d'Herculais. Probably this peculiar habit, approaching that of the following genera, will be found to support the natural restriction of the genus *Thyridanthrax* to the species of the present group alone. It is interesting to know that the Ethiopian species here described are very like those of Europe and the Mediterranean Region, and may be distinguished much in the same way as *Th. fenestratus*, *Th. perspicillaris*, *Th. gallus*, *Th. indigenus* and *Th. hispanus*. The Ethiopian forms, however, show a tendency towards greater development of the recurrent veinlet at the base of the cubital fork, which, among the species just mentioned, is sometimes present only in *Th. perspicillaris*. In some species, such as *Th. ternarius*, this veinlet is even united with the second longitudinal vein, thus forming three submarginal cells as in the genus *Exoprosopa*; the species alluded to is the commonest and most widely distributed representative of its genus in the Ethiopian Region. It is very probable therefore that some species described under *Exoprosopa* should really be included here. This is certainly the case with regard to *E. laeta*, Loew and Bezzi, as to which Loew himself drew attention to the form of the third antennal joint, and the shape of the third posterior cell. These two characters, as well as the wing-pattern and the absence of a basal tooth on the claws, show without any doubt that the species belongs to *Thyridanthrax*. I am inclined to think that even *E. caffra*, Wied., which is unknown to me, may belong here. On the other hand, *E. aegina*, Wied., which has fenestrate wings, is a true *Exoprosopa*, as shown by the antennae and the toothed claws.

The rather numerous species before me may be distinguished as follows:—

- 1 (28). Apical cross-vein of discoidal cell straight; wings never with fenestrate pattern, and always with only two submarginal cells.
- 2 (19). Wings entirely hyaline, or only with narrowly luteous or black base, or with infuscated subcostal cell; middle cross-vein situate before middle of discoidal cell, and often very near its base.
- 3 (10). Face not conical, only bluntly convex; third posterior cell short and obtuse, its contact with discoidal cell being about as long as that of the fourth posterior with same cell.
- 4 (9). Anterior half of frons devoid of glistening argenteous scales; abdomen with broad pale yellowish bands of scales on all segments; metapleural tuft devoid of black hairs; ♂ genitalia as small as usual.
- 5 (8). Wings entirely hyaline; third antennal joint shortly conical.

- 6 (7). Postalar bristles yellow; discoidal cell not triangular; pleurae and breast clothed with black or blackish hair; clothing of venter black. *lloydi*, Austen.
- 7 (6). Postalar bristles black; discoidal cell triangular; pleurae and breast with pale yellowish hair; clothing of venter pale yellowish and white. *triangularis*, sp. nov.
- 8 (5). Wings with costal cell infuscated, and besides with base of second longitudinal vein, as also middle cross-vein narrowly margined with fuscous; third antennal joint more elongate conical. *pseudoflammiger*, sp. nov.
- 9 (4). Frons with anterior half covered with a large patch of glistening argenteous scales; abdomen mainly black, with only two white bands; metapleural tuft with black hairs beneath; ♂ genitalia larger and pendulous: very small species. *beckerianus*, sp. nov.
- 10 (3). Face conically produced.
- 11 (12). Third posterior cell short, as in preceding species; wings with base and costal cell infuscated, and with middle cross-vein narrowly margined with fuscous. *flammiger*, Walk.
- 12 (11). Third posterior cell long and rather acute, its contact with discoidal cell being always longer (often twice as long and more) than contact of fourth posterior with same cell; middle cross-vein not margined with fuscous.
- 13 (16). Wings with yellowish base and yellowish subcostal cell; terminal dip in second longitudinal vein less deep.
- 14 (15). Abdomen without white bands, entirely clothed with luteous scales; lateral stripes of thorax not distinct. *luteolus*, sp. nov.
- 15 (14). Abdomen with white bands and broad white tip; lateral white stripes on thorax well developed. *leucoproctus*, Loew.
- 16 (13). Wings with black base and blackish subcostal cell; dip at end of second vein very deep.
- 17 (18). Metapleural tuft white; pleurae clothed with reddish-yellow hair on upper part. *lineus*, Loew.
- 18 (17). Metapleural tuft black; pleurae entirely black-haired. *melanopleurus*, Bezzi.
- 19 (2). Wings with more or less extensive blackish or brownish markings, which at least occupy part of second basal and anal cell, but are never fenestrate, *i. e.* are always without hyaline or clear spots on cross-veins and bifurcations; face and palpi entirely black; thoracic bristles black; third posterior cell usually long.
- 20 (27). Face conical; discoidal cell rather acute outwardly, with middle cross-vein situate before its middle; wings not half black, half hyaline.
- 21 (24). Discoidal cell long, about twice as long as second posterior cell; first posterior cell distinctly narrowed at distal extremity, less than a half as wide as second posterior cell at end.
- 22 (23). Wing-pattern light brownish and rather reduced, not occupying end of second basal cell. *viduatus*, Loew.
- 23 (22). Wing-pattern blackish and more extensive, occupying whole of second basal cell. *abruptus*, Loew.
- 24 (21). Discoidal cell short, only a little longer than the second posterior cell; first posterior cell not narrowed at end, and about as broad as second at distal extremity.
- 25 (26). Dark basal pattern ending at base of discoidal cell and at tip of second basal cell. *lugens*, Loew.
- 26 (25). Basal pattern extending over basal half of discoidal cell and over base of fourth posterior cell. *transiens*, sp. nov.
- 27 (20). Face not conical, only somewhat bluntly convex; wings very broad, half black, half hyaline, with middle cross-vein situate beyond middle of discoidal cell, which is broadly obtuse at end; third posterior cell very long and acute. *inauratus*, Klug.
- 28 (1). Apical cross-vein of discoidal cell S-shaped and very oblique; wings fenestrate, *i. e.* with clear or hyaline spots on cross-veins and

- bifurcations in dark part; face yellow, at least on sides, and less conical; palpi and thoracic bristles yellow; middle cross-vein situate near middle of discoidal cell; third posterior cell very long and acute, contact of fourth posterior with discoidal cell being very short, and often punctiform.
- 29 (36). Only two submarginal cells as usual; wings with rather broad yellow base.
- 30 (33). Wings very broadly yellow at base, only distal end of both basal cells and distal half of anal cell being brown; third and fourth posterior cells narrowly infuscated at base; upper branch of cubital fork without an appendix; middle cross-vein a little before middle of discoidal cell; white stripe on pleurae complete.
- 31 (32). Brown band on wings reduced to some fainter spots on cross-veins and bifurcations; anal cell with only a small dark spot in middle; wing veins yellow. *calochromatus*, Bezzi.
- 32 (31). Dark band deeper in colour and broader, occupying basal half of anal cell; wing veins black. *macquarti*, Bezzi.
- 33 (30). Wings more narrowly yellow at base, both basal cells and anal cell being entirely brown, or only narrowly yellow at base; third and fourth posterior cells broadly infuscated at base; middle cross-vein on middle of discoidal cell.
- 34 (35). Pleurae with a complete white stripe; "window-panes" in wings narrow and infuscated; third and fourth posterior cells very narrowly pale at base; discoidal cell with approximately apical lower half hyaline; upper branch of cubital fork without appendix; abdominal bands white. *subperspicillaris*, sp. nov.
- 35 (34). Pleurae entirely yellow-haired, without stripe of white hair; "window-panes" in wings hyaline and very broad, nearly confluent so as to form a hyaline band dividing basal brown patch into two; squamae with yellowish fringe; abdominal bands yellowish; third and fourth posterior cells broadly hyaline at base; upper branch of cubital fork with an appendix; discoidal cell with only apex hyaline. *incipiens*, sp. nov.
- 36 (29). Three submarginal cells regularly present; middle cross-vein situate beyond middle of discoidal cell; third and fourth posterior cells almost entirely brown.
- 37 (38). White pleural stripe complete; legs black, with tibiae more or less yellowish; wings narrowly or not at all yellow at base, with small, isolated, infuscated "window-panes," brown pattern ending before tip of discoidal cell, apex of latter being hyaline. *ternarius*, sp. nov.
- 38 (37). Pleurae entirely yellow-haired and devoid of white stripe; legs entirely yellow; wings broadly yellow at base, with broad yellowish "window-panes," which in middle are confluent, so as to form a single hyaline band, dividing brown area into two bands united together on hind border; brown pattern extending over discoidal cell, apex of latter usually being completely filled up. *laetus*, Loew.

Group 1. *Th. lloydi*.

156. *Thyridanthrax triangularis*, sp. nov.

A smallish, black species, with banded abdomen and entirely hyaline wings, which have an almost perfectly triangular discoidal cell.

Type ♂ and type ♀ from Arabia, Lahej, 19–21 February, 1895 (*Lt.-Col. C. G. Nurse*).

The present species is apparently closely allied to *Th. lloydi*, Austen, from N. Rhodesia, but is much larger and distinguished by the characters given in the table.

♂♀. Length of body 9–10 mm.; length of wing 9–10 mm.

Head black; occiput dark grey-dusted, lower than eyes above, with postvertical furrow little developed, clothed on upper side with pale yellowish scales, which become whitish near eye-borders, and with a whitish central fringe. Vertex somewhat hollowed out, with very small ocellar tubercle. Frons very narrow above, in ♂ only a little broader than ocellar tubercle, in ♀ twice as broad as tubercle; frons clothed with erect black hair and with pale yellowish scales, which become more abundant in front, above antennae. Face convex, rather prominent but not conical, clothed with short black hair and pale yellowish scales; cheeks separated from face by a slightly marked but distinct furrow; jowls rather broad, yellowish coloured, with sparse black hair and yellow scales; chin black, grey dusted and almost bare, like lower part of occiput. Eyes with indentation little developed, but with distinct bisection line; upper facets in ♂ broader than lower ones. Antennae entirely black; first joint twice as long as second, and clothed with short black hairs above and beneath; third joint twice as long as first two joints together, shortly conical, beyond middle gradually tapering to a styliform point, which ends in a minute bristle. Proboscis black, as long as mouth opening; palpi long, black, with scattered, long, dark yellowish hairs. Thorax and scutellum entirely black, dark grey dusted, dull, clothed with yellowish hair and scales, more abundant anteriorly and in front of scutellum; base of scutellum with black scales; fringe of erect hair in front of fore border yellowish, hair on sides whitish, forming a complete lateral stripe; all bristles black; pleurae with pale yellowish hair, with dense, whitish metapleural tuft. Squamae dirty whitish, with white fringe; halteres pale yellowish, with whitish knobs. Abdomen like thorax; segments clothed on basal half with yellowish or whitish, and on distal half with black scales; third and sixth segments each in addition with two small bands of white scales, broadly interrupted in middle; seventh segment almost entirely clothed with white scales; sparse hair on back and sides black, except that at base, on sides of first and anterior part of second segment, there is dense whitish hair. Venter black, with pale yellowish scales, and erect whitish hair. Legs black, with pale yellowish scales, but ground-colour of front tibiae dark reddish; front coxae very long, with some black hairs; front femora with a row of two or three short bristles on upper side; middle femora on anterior side with two long, strong bristles; hind femora beneath with a complete row of five or six similar bristles; all these bristles, as also spicules, black; front tibiae smooth; claws black, those of front legs very small. Wings entirely hyaline, somewhat pale yellowish at base and in subcostal cell; basal hook thin, spiniform, black; basal comb black, with some yellowish scales at base; alula hyaline, with short white fringe, scaly on hind part. Veins yellow, darkened

at end; apical dip in second longitudinal vein not very deep; upper branch of cubital fork deeply arcuate in middle; middle cross-vein situate on basal third of discoidal cell; first posterior cell little, but distinctly, narrowed at end; third posterior cell very short, trapezoidal, its contact with discoidal cell being almost straight and not longer than that of fourth posterior with same cell; apical cross-vein of discoidal cell exactly parallel with hind border of wing, in same line with vein dividing discoidal from third posterior cell; therefore discoidal cell in shape of a regular isosceles triangle, very acute at end, and twice as long as second posterior cell; second basal cell broad; anal cell rather broadly open.

The ♀ type shows a short rudiment of a stump of a vein on the basal bend of the upper branch of the cubital fork.

157. *Thyridanthrax pseudoflammiger*, sp. nov.

Closely allied to the preceding species, but at once distinguished by the faint infuscation of the fore border, and of the middle cross-vein of the obviously shorter wings.

Type ♀, and an additional specimen of the same sex from Arabia, Aden, 5 April, 1895 (*Lt.-Col. C. G. Nurse*). The present species is evidently allied to the West African *Th. flammiger*, Walk., which has, however, a conical face.

♀. Length of body 7.5–8.5 mm.; length of wing 6–7 mm.

Head as in *Th. triangularis*, though white occipital border more distinct and glistening; third antennal joint somewhat different, more elongate and conical, gradually tapering to a point only as long as one-third of length of whole joint. Thorax and scutellum likewise, as in *Th. triangularis*, but mesopleurae in middle and sternopleurae with black hair; abdomen as in *Th. triangularis*, but black hair more abundant on sides, and venter mainly black-haired. Legs as in *Th. triangularis*, with dark reddish front tibiae, but scales on femora mainly black. Wings with same neuration, but apical vein of discoidal cell not in same line as preceding one, and thus discoidal cell not so regularly triangular; extreme base and costal and subcostal cells pale brownish; first basal cell infuscated in basal half; middle cross-vein and adjacent basal part of second longitudinal vein narrowly margined with fuscous; a dark rounded spot in place of praediscoidal spot; vein dividing second basal from fourth posterior cell likewise towards middle narrowly margined with fuscous.

158. *Thyridanthrax beckerianus*, sp. nov.

A small, narrow, black species looking somewhat like a *Paragus*, distinguished by its glistening silvery frons and mainly black abdomen, which is adorned with two white transverse bands.

Type ♂, type ♀, and an additional ♂ from Sierra Leone, Kama-toto, 16 April, 1912 (*Dr. J. J. Simpson*); two other ♂♂ from

N.-W. Rhodesia, Chilanga, 4,030 ft., 5 September, 1913, "on sandy path" (*R. C. Wood*). The present species appears to be very closely allied to *Th. argentifrons*, Becker, from Sokotra, but is distinguished by the black-haired pleurae and white halteres, and by the white abdominal bands being situated on the third and sixth (instead of on the second and third) abdominal segments. The resemblance between these two species and small Syrphid flies of the genus *Paragus* is very interesting, and is probably due to the fact that they all mimic the same species of small Aculeate Hymenoptera; my friend Becker in whose honour the species is named, has already alluded to this fact.

♂♀. Length of body 4.5–5 mm.; length of wing 4–4.5 mm.

Head deep black, globular, more broader than thorax; occiput less developed than in allied species, its white lateral borders being broad and glistening silvery-white. Eyes with faint indentation, but distinct bisecting line; in ♂ upper facets broader than those of lower half. Frons in ♂ at vertex a little broader than ocellar tubercle, in ♀ twice as broad, in both clothed with erect black hairs and with a broad patch of glistening silvery scales above antennae, less developed in ♀. Face entirely clothed with short black hair, and with very sparse and scattered white scales; jowls narrow, black. Proboscis as long as oral cavity, black, like palpi. Antennae entirely black, basal joints with short black hairs; third joint broad at base, conical, gradually tapering to a short point, which ends in a two-jointed style. Thorax and scutellum entirely black, rather shining, with long black bristles, and clothed in middle with black, on sides and behind with whitish scales; fringe of erect hair in front of fore border is yellowish; hair on sides yellowish or white, forming a complete lateral stripe; pleurae black-haired, near notopleural line with a tuft of black bristly hairs in ♂, and a reddish tuft in ♀; metapleural tuft bicolorous, having white hairs above and black hairs below. Halteres white or pale yellowish; squamae pale brownish, whitish behind, with short, white, scaly fringe. Abdomen not broader than thorax, black, clothed chiefly with black scales and black hairs, though on sides of first and of part of second segment there is dense whitish hair; base of third and sixth segments each with a narrow, complete band of white scales; seventh segment almost entirely clothed with white scales; ♀ also with a less distinct whitish basal band on fourth segment; in addition, in well-preserved specimens, there are yellowish scales, forming very narrow, more or less indistinct bands on hind margin of first, and at base of second, fourth and fifth segments. ♂ genitalia very large, black and pendulous, situate on left side; ovipositor with dark spines. Venter black, with black scales and short black hair. Legs entirely black, and clothed with black hair even on front coxae, their scales and spines also black; front tibiae deep black and smooth; front femora without spines, middle femora with a single spine, hind

femora with two long and strong spines; front tarsi thinly pubescent; claws black. Wings hyaline, smooth, iridescent, somewhat pale yellowish at extreme base, and with subcostal cell black to end of auxiliary vein; basal comb small, black; alula hyaline, with short white fringe; veins black, regular, dip in second longitudinal vein not deep; first posterior cell not narrowed at end; discoidal cell only a little longer than very long second posterior cell; contact of third posterior cell with discoidal cell a little longer than that of fourth posterior with same cell; middle cross-vein situate on first third of discoidal cell; anal cell rather broadly open. Only one specimen out of the five available for examination shows at the base of the upper branch of the cubital fork a recurrent veinlet, equally developed in both wings; in this specimen the contact of the third posterior cell with the discoidal cell is one and a half times as long as that of the fourth posterior with the same cell.

Group 2. *Th. afer*.

159. *Thyridanthrax flammiger*, Walker (1849).

A medium-sized species, characterised by its conical face, short third posterior cell, infuscated costal cell, and middle cross-vein margined with fuscous.

Of this species, in addition to the type, which was obtained in Sierra Leone, there is in the British Museum a series of specimens of both sexes from N. Nigeria, Zungeru, November, 1910, and Ilorin, April, 1912 (*Dr. J. W. Scott Macfie*).

Since the species is quite unrecognisable from the original description, a redescription is given below.

♂♀. Length of body 8.9 mm.; length of wing 6-7 mm.

Head black, dark grey dusted; occiput on eye-borders with white scales, which are not only developed on part below eye-indentation, as in allied species, but are present also above, extending to vertex, thus forming a complete band around head, passing over postvertical furrow, which is not very well marked. Eyes in ♂ with upper facets but little enlarged, in both sexes with deep indentation and long bisecting line. Frons at vertex in ♂ a little broader than ocellar tubercle, in ♀ twice as broad, clothed in both cases with erect black hair, and with whitish or yellowish scales on whole length, but more abundant above antennae. Face very prominent, with short, sparse black hair, and with dense yellowish scales, chiefly in middle; jowls narrow, black, like chin; proboscis black, as long as mouth; palpi long, curved, blackish or brownish, with long dark hairs. Antennae entirely black; first joint with black hairs; third joint elongate conical, gradually tapering to a short point, with a two-jointed style as in *Th. afer*. Thorax and scutellum black, with black bristles; anterior fringe yellow; lateral stripes of whitish hair complete; scaly yellowish tomentum on back form-

ing three equidistant, narrow longitudinal stripes. Pleurae with yellow hair, but that of metapleural tuft more whitish; breast above front coxae with black hair. Squamae pale brownish, with white fringe; halteres yellow, with whitish knobs. Abdomen black, clothed with long whitish hair on sides at base, almost bare elsewhere, with broad transverse bands of yellowish, and narrow bands of black scales; third and sixth segments at base, and seventh entirely, clothed with whitish scales; ♂ genitalia small, concealed, black; spines on ovipositor dark reddish or brownish; venter black, clothed with abundant yellowish scales and sparse whitish hair. Legs black, with reddish front tibiae; legs with yellowish scales, black and dark yellow hairs on coxae, and black spines and spicules; middle femora with a single spine, hind femora with three or four long spines; front legs with smooth tibiae, pubescent tarsi and small claws; claws black. Wings with the same neurulation as in *Th. triangularis*, and with the same pattern as in *Th. pseudoflammiger*; anal cell more widely open; terminal dip in second longitudinal vein deeper; no distinct infuscation on vein dividing second basal from fourth posterior cell; basal comb black, with yellow scales.

160. *Thyridanthrax luteolus*, sp. nov.

A small black species with conical face, distinguished by the entirely yellow clothing of the body and by the completely hyaline wings, which have a pale yellowish base.

Type ♀ from Kenya Colony, Moyale, 10 October, 1911 (*R. J. Stordy*: presented by the Imperial Bureau of Entomology).

♀. Length of body 5 mm.; length of wing 5 mm.

Head black; occiput with complete, glistening, silvery eye-border, though in postvertical furrow latter is replaced by yellow scales; below eye-indentation, which is not very deep, border is mainly yellow; central fringe yellow. Frons dark grey dusted, twice as broad as small ocellar tubercle, clothed with rather long, erect black hair, and with yellow scales, which are more abundant above antennae. Face conical, prominent, entirely clothed with abundant yellow scales, and at sides with sparse hairs, which are yellow above and black beneath; antennae black; first joint as long as second, with short black hairs; third joint elongate conical, more than twice as long as first two joints together, gradually tapering to a fairly stout point, with a bisected terminal style, as long as one-third of whole joint. Proboscis black, a little longer than mouth opening. Thorax and scutellum black, entirely clothed with yellow scales; bristles yellow; fringe of erect hair on fore border yellowish, like hair on sides, usual white lateral stripe therefore scarcely indicated; pleurae with yellow hairs, but metapleural tuft whitish. Squamae pale dirty yellowish, with white scaly fringe; halteres pale yellow, with whitish knobs. Abdomen black, entirely clothed with yellow scales, devoid of white scales even at tip, with sparse

whitish hair on sides at base, and with scattered black hairs at distal extremity; venter black, clothed like dorsum. Legs entirely black, with abundant yellow scales and short yellow hairs on front coxae; spines black, on middle femora two, on hind femora three, rather long and strong, like spicules on middle and hind tibiae; front legs with smooth tibiae, thinly pilose tarsi and very small claws, black like remainder. Wings rather long and broad, smooth, hyaline, iridescent; basal comb small, entirely clothed with yellow scales; pale yellowish basal tinge extending to middle of second costal and of first basal cells; veins yellow, their distal extremities dark brown; terminal dip in second longitudinal vein rather deep; upper branch of cubital fork of normal shape; first posterior cell not narrowed at end; discoidal cell rather obtuse outwardly, one and a half times as long as rather long second posterior cell; middle cross-vein long, situate on first third of discoidal cell; third posterior cell of medium length, rather acute inwards, its contact with discoidal cell being slightly undulating, and one and a half times as long as that of the fourth posterior with same cell; anal cell broadly open; axillary lobe short and broad; alula faintly yellowish, with a pale yellowish, close-set and scaly fringe.

161. *Thyridanthrax lineus*, Loew (1860).

A black species, with a white- and yellowish-banded abdomen, closely allied to the Mediterranean *Th. vagans*, Loew, but differing in the wings being black at the base, and having a double loop (or dip) at the end of the second longitudinal vein.

Originally described from Caffraria and recorded from Erythraea: there is in the British Museum a ♂ specimen from Natal, Willow Grange, Mooi River, 7 September, 1913 (the late *R. C. Wroughton*).

In the wing of this species the usual dip or loop at the end of the second longitudinal vein is preceded by another, smaller loop in the contrary direction; the first posterior cell is not narrowed at the end, and the line of contact between the third posterior and the discoidal cell is about one-third as long again as the line of contact between the fourth posterior cell and the same cell.

162. *Thyridanthrax melanopleurus*, Bezzi (1912).

Closely allied to the preceding species, but distinguished by the clothing of the pleurae being almost entirely black.

In addition to the type (a ♀ from the Nyasaland Protectorate), and four paratypes, representatives of this species in the British Museum include: a ♂ from Kenya Colony, Oyani Stream, Kenyamkago, 16 December, 1911 (*Dr. B. W. Cherrett*); and another ♂ from Nyasaland, Blantyre, 7 May, 1910 (*Dr. J. E. S. Old*).

The venational characters of the present species are the same

as those of the preceding one, but the additional loop at the end of the second vein is less pronounced. In the black metapleural tuft, more or less numerous yellow hairs are intermingled. The undescribed ♂ is very like the ♀; its frons is a little broader than the ocellar tubercle; the genitalia are rather large, black, pendulous and proceed from the left side.

163. *Thyridanthrax viduatus*, Loew (1860).

Among the species with basomarginal markings on the wings, *Th. viduatus* is distinguished by the reduction of the pattern, which occupies only the costal cells (except the tip of the third costal), the bases of the marginal and anal cells, the entire first basal cell, and the second basal except the distal fourth.

The present species, originally described from the Cape of Good Hope and from Caffraria, was subsequently recorded from Erythraea, and appears to be widely distributed in the Ethiopian Region. The British Museum possesses a ♀ from Nyasaland, Nakuru, January, 1913 (*Dr. B. L. van Someren*); and two other ♀♀ from Kenya Colony, Moyale, 7-16 October, 1911 (*R. J. Stordy*). A ♂ from N.-W. Rhodesia, Chilanga, 30 June, 1913, "on bare ground below large thorn tree" (*R. C. Wood*), is of larger size, measuring more than 9 mm. in length, and has a dark spot at the end of the second basal cell, below the usual praediscoidal spot.

164. *Thyridanthrax abruptus*, Loew (1860).

Closely allied to the preceding, but distinguished by the blacker and more extensive basomarginal wing-pattern, which includes the whole of both basal cells, and a larger part of the anal cell.

Originally described from Caffraria, *Th. abruptus* is now known as a common South African species; but it likewise seems to be widely distributed elsewhere in the Ethiopian Region, being recorded from W. and N. Nyasa, and from N. Nigeria. In S. Rhodesia it has been bred by Mr. R. W. Jack from pupae of *Glossina morsitans* (*cf. Waterston, Bull. Entom. Research*, VI, p. 82, 1915). The material belonging to this species in the British Museum includes, in addition to a series of specimens from Nyasaland and N. Nigeria: a ♀ from Kenya Colony, Oyani Stream, Kenyamkago, 16 December, 1911 (*Dr. B. W. Cherrett*); two ♀♀ from Abyssinia, November, 1911 (*R. J. Stordy*); one ♀ from N. Uganda, Morongole, 6 September, 1913 (*Dr. H. B. Owen*); and one from Natal, Heavitree, near Estcourt, 1913 (*D. Dibben*).

165. *Thyridanthrax lugens*, Loew (1860).

Closely allied to *Th. abruptus*, but easily distinguishable owing to its very different venation, and somewhat different wing-pattern.

This species was originally described from the Cape of Good

Hope, and has not been recorded subsequently. It is represented in the British Museum by a pair of specimens from Kenya Colony: a ♂ from Kitui (*S. W. J. Scholefield*), and a ♀ from Attitude, "on flowers," 3 August, 1911 (*T. J. Anderson*).

The ♂, which is as yet undescribed, resembles the ♀; the frons in the former is very narrow at the vertex, being only as broad as the small ocellar tubercle; the genitalia are somewhat large, black in colour, and pendulous.

166. *Thyridanthrax transiens*, sp. nov.

A very small species, closely allied to the preceding, but differing in the black wing-pattern being more extensive, occupying the base of the fourth posterior cell, and more than half of the anal cell and axillary lobe. With one exception (from Southern Rhodesia), all the examples of this species at present in the British Museum are from Nyasaland.

Type ♂, type ♀ and some additional specimens from N. Nyasa, Karonga, 10 April, 1910 (*Dr. M. Sanderson*); a ♂ from Maiumbe, 21 June, 1912 (*J. G. Morgan*); and a ♀ from Mlanje (*Dr. J. B. Davey*). Also a ♂ from S. Rhodesia, Sawmills (presented by the Rhodesia Museum).

♂♀. Length of body 4.5–6 mm.; length of wing 4.5–5.5 mm.

Head black; occiput with a broad, glistening white band in deep eye-indentation, continued upwards to small postvertical furrow. Eyes with distinct bisecting line, and in ♂ with upper facets only a little larger than remainder. Frons in ♂ a little broader than small, black-haired ocellar tubercle; in ♀ twice as broad, in both clothed with erect black hair, and with numerous pale yellowish or whitish scales. Face conically produced, with sparse black hair and scattered yellowish scales; jowls narrow, black, like chin; proboscis black, as long as mouth; palpi black, curved, dark pilose. Antennae entirely black, with first and second joints of equal length, former with short black hairs; third joint short and conical, with broad base, and with styliform part rather thick but long, ending in a thin, bisected style. Thorax and scutellum entirely black, tolerably shining, with black bristles; yellow scaly tomentum showing tendency to form in middle of back three narrow longitudinal stripes; erect hair forming anterior fringe yellow; lateral stripe of white hair complete and well developed; hair on pleurae yellow, that forming metapleural tuft whitish above and yellow below; hair on breast black. Squamae black, with white or pale yellowish, scaly fringe; halteres yellow, with whitish knobs. Abdomen black, on sides at base with whitish hair; hair at tip entirely whitish in ♂, black in ♀; black and yellowish scales forming usual alternating bands, but at base of second, third and sixth segments bands are formed by white scales, bands on third and sixth segments being broader; seventh segment entirely clothed with white scales; ♂ genitalia black and pendulous, of medium

size; venter black, with yellowish scales and with pale hair in ♂, but dark-haired in ♀. Legs entirely black, with yellow scales and black hair on front coxae; spines black, two on middle and three on hind femora, long and stout; claws black, those on front tarsi very small; spicules and apical spurs on tibiae long, but front tibiae smooth. Wings rather broad, smooth and iridescent, showing full pattern of *Th. afer* group, so that they may be termed dimidiate; edge of blackish area running in an oblique and jagged line from end of auxiliary vein to middle of axillary lobe, extending slightly beyond middle cross-vein, filling more than a third of discoidal and more than half of anal cell, and even including base of fourth posterior cell; dark part exhibiting usual clear spot in first basal cell, below origin of third longitudinal vein; praediscoidal spot dusky grey; loop or dip at end of second longitudinal vein deep, and preceded by a small loop in contrary direction; upper branch of cubital fork correspondingly much bent in middle; first posterior cell not narrowed at end, as broad as second; discoidal cell rather broad, sometimes of same length as second posterior cell, sometimes half as long again; third posterior cell usually rather long, but obtuse, its line of contact with discoidal cell being usually half as long again as that of fourth, though sometimes of equal length; middle cross-vein a little before middle of discoidal cell; anal cell broadly open. Basal comb black, with yellowish scales; alula blackish, with thick, dark, scaly fringe; axillary lobe broad and short.

Group 3. *Th. inauratus*.

167. *Thyridanthrax inauratus*, Klug (1832).

A handsome species, presenting a marked resemblance to certain representatives of *Hemipenthes*, and differing from any other form here recorded owing to the very dense, bright golden, scaly pubescence clothing the entire abdomen.

Th. inauratus, originally described as "in Arabia felici semel inventa," appears to be a very rare insect, and has never been recorded subsequently; in Kertész's Catalogue it is erroneously placed in *Argyramoeba*, perhaps on account of its dimidiate wings. Klug says nothing about the sex of his specimen, but, judging from his beautiful coloured figure, it seems to be a ♀; the ♂, of which I have seen a specimen in the collection of the Hungarian Museum at Budapest, closely resembles the opposite sex.

This species is represented in the British Museum by a solitary ♀ from Somaliland, Zaila, 23 May, 1895 (*Lt.-Col. C. G. Nurse*), which bears a label with the correct name. The appended description of this handsome fly will perhaps be of interest.

♂♀. Length of body 10 mm.; length of wing 10·5 mm.; wing-expanse 24 mm.; breadth of wing 4·5 mm.

Head black, globular, as broad as thorax; occiput broad,

with some dark blue scales above and near eyes, in place of usual white stripe, which in this case is wanting; postvertical furrow broad and deep; central fringe short and dense, blackish-brown, but dark yellowish shining in certain lights. Eyes dark brown, with equal-sized facets, except that in ♂ they are slightly broader above; lateral indentation little developed, but bisecting line distinct. Ocellar tubercle broad, oval, not very prominent, black and black-haired. Frons at vertex a little broader than ocellar tubercle, approximately equal in breadth in both sexes, velvety black, clothed with numerous short black hairs and brilliant violet scales, latter being more abundant near antennae; similar scales sometimes present on face, which agrees with frons in coloration and hairy covering, and is not conical but only bluntly convex; jowls brownish, narrow; proboscis black, as long as mouth, with prominent, pointed terminal labella; palpi black and thick, with dark yellowish hair. Antennae entirely black; first joint twice as long as globular second joint, and clothed with short black hairs; third joint elongate conical, twice as long as first two joints together, not tapering to a styli-form point, but with a simple, thin, terminal bristle. Thorax entirely deep black, clothed on back with shining dark blue scales; hair forming anterior fringe and that on sides intensely black, like bristles; pleurae blackish-brown, dark grey dusted, hair above near notopleural line intensely black, dense and bristly, hair below black and softer; no blue scales; metapleural tuft dense and deep black; plumula snow-white, forming a white tuft on each side of mesophragma ("metathorax basitruinque macula villosa, argentea," in Klug's description). Scutellum deep black, with blue scales like thorax, and with numerous black bristles on hind border. Squamae deep black, with blackish-brown fringe of broad scales; halteres blackish, with knobs dark yellowish below. Abdomen subquadrate, as long as thorax, and black, but on back ground-colour entirely concealed (except in case of hardly visible first segment) beneath very dense scaly pubescence, which is rather long and depressed, bright golden and somewhat glistening; lateral borders completely fringed with short, dense black hair, which is continued on to entirely deep black and black-clothed venter. ♂ genitalia blackish-brown, large, broad and pendulous, situate on left side, and clothed with black and golden hair (assuming the present specimen, in which the abdomen is closed at the tip, to be a ♀, the protruding genitalia of the ♂ form the only means of distinguishing the sexes, which are very similar in coloration). Hair on sides of first abdominal segment black like rest of abdominal hair, and not much longer. Legs intensely black, with velvety-black scales and spines, and with black hair on coxae; hind tibiae with dense but short fringe on each side; spicules on middle tibiae long, front tibiae smooth; spines on femora thin and long, none on front pair, three on middle pair,

and a complete row of seven to eight on hind pair; claws black, with reddish base; pulvilli wanting; front tarsi very short, with short, thin pubescence and rather short claws; front legs considerably smaller and shorter than remainder. Wings very broad, much broader than in any other species here described; separation between blackish and hyaline portions forming a definite, regular line, running obliquely from end of auxiliary vein to posterior end of fourth posterior cell; only apical fifth of discoidal cell uncoloured; anal cell and axillary lobe completely coloured; entire blackish area very uniform in tint, greyish praediscoidal spot forming only interruption; hyaline portion (less than half of entire wing) somewhat whitish. Basal hook deep black, thin, curved and spiniform; basal comb exceedingly broad and black, with a broad elongate patch of shining silvery scales; another rounded, shining silvery scale situate just above root of wings; alula blackish, with broad, long, blackish, scaly fringe, which is continued along base of very broad axillary lobe. Veins dark yellowish in hyaline, and blackish in black area; second costal cell broader than usual; second longitudinal vein very short, originating opposite middle cross-vein, with a broad but shallow dip at end; first posterior cell rather narrow and somewhat narrowed at end; middle cross-vein very long and oblique, situate beyond middle of discoidal cell, which is elongate, as in *Hemipenthes*, and obtuse at end, its terminal cross-vein being straight and almost perpendicular to hind border; second posterior cell half as long as discoidal cell, and narrower; third posterior cell only a little shorter than fourth, its contact with discoidal cell being therefore about ten times as long as that of fourth; anal cell very broad in middle and greatly narrowed at end; second basal cell as long as discoidal cell, but broader at end; upper branch of cubital fork normal.

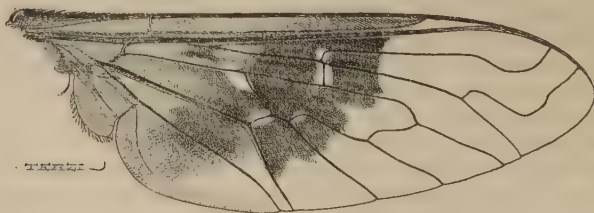


FIG. 17.—*Thyridanthrax macquarti*, Bezzi. Wing of ♀. $\times 8$.

Group 4. *Th. fenestratus*.

168. *Thyridanthrax macquarti*, Bezzi (1912).

A pretty species, distinguished by the relatively narrow, fenestrate, dark band on the wings, which are very broadly yellowish at the base. It was described by Macquart from the

Cape of Good Hope as *A. fenestralis*; but since this name is preoccupied by Wiedemann, I changed it into that given above when recording the species from North Nyasa. In addition to a series of specimens from N. Nyasa, and another individual from the Blantyre district, 27 August, 1910 (*Dr. J. E. S. Old*), the British Museum possesses two individuals from N.-W. Rhodesia, Chilanga, 18 September, 1913, "on path" (*R. C. Wood*). The present species, which is the smallest of its group, has no appendix at the base of the cubital fork; the contact of the fourth posterior with the discoidal cell is very narrow, sometimes almost punctiform.

169. *Thyridanthrax subperspicillaris*, sp: nov.

Closely allied to the Mediterranean *Th. perspicillaris*, Loew, from which it differs in being somewhat smaller, and in having partly yellow legs and wings more broadly yellow at the base.

Type ♂, from Kenya Colony, Makindu, 16 December, 1911 (*Dr. S. L. Hinde*); also some specimens of both sexes from the Cape Province, Cradock, and the Transvaal, Pretoria, April, 1914 (*Miss J. Brincker*). The species thus appears to be widely distributed. The upper branch of the cubital fork sometimes shows a rudimentary appendix, as in the following species, but shorter and irregular.

♂. Length of body 10 mm.; length of wing 10 mm.

This species resembles *Th. perspicillaris* so closely that it will be sufficient to point out the difference in order to describe it. Scutellum red, with only a narrow black base. On abdomen, long hair on hind border of sixth and on entire seventh segment wholly white or whitish. On wings basal comb entirely clothed with yellow scales; yellow area of base distinctly broader; fuscous pattern in discoidal cell as in *Th. perspicillaris*, therefore very different from that of the other species here described: in present species, indeed, only basal half infuscated, while along fore border a brown band extends to apical fourth; in the other species two-thirds or even three-fourths of the discoidal cell are infuscated, only the apex being hyaline, and the brown area is equally distributed above and below. Apical dip in second longitudinal vein less deep, and discoidal cell more regular in its outline, its two lower veins being less sinuous.

Antennae and legs are wanting in case of the type; but I have seen a ♂ of this species in the Hungarian Museum at Budapest. The antennae are as in *Th. perspicillaris*; the legs are not black, but have yellowish tibiae, and the front femora are yellow on the apical half or even more, the middle and hind femora being narrowly yellow at the tips; the basal joints of the front and middle tarsi are likewise yellow.

170. *Thyridanthrax incipiens*, sp. nov.

A very distinct species, owing to the pleurae being clothed with entirely yellowish hair, the yellowish tomentum of the abdominal bands, and the wings having a recurrent veinlet at the base of the cubital fork and very broad, whitish-hyaline "window-panes."

Type ♂, type ♀ and an additional ♂ from Kenya Colony, Makindu, 16 December, 1911 (*Dr. S. L. Hinde*).

This species is noteworthy by reason of the lack of the white mesopleural stripe, which it shares with *Th. fenestratus*, Fall., and the regular presence of the veinlet, which may be considered as the beginning of the formation of the three submarginal cells found in the following species.

♂♀. Length of body 9.5–11 mm.; length of wing 10–13 mm.

Head black above and behind, red in front, dark grey dusted. Occiput clothed with yellow scales, more abundant near eyes, thus forming a yellow stripe; postvertical furrow narrow; central fringe yellow. Eyes with indentation of little depth, and with a short bisecting line; upper facets in ♂ distinctly larger. Ocellar tubercle small, black and prominent. Frons in ♂ twice, in ♀ thrice as broad as ocellar tubercle, clothed with black erect hairs and abundant yellow scales; frons black behind, anterior half or more red and more densely clothed with scales. Face bluntly conical, entirely red, with pale yellowish hair and yellow scales, on upper edge of mouth with usual black tuft; jowls and mouth borders pale yellowish; proboscis black, longer than mouth opening, and thus with projecting tip; its basal ring and palpi yellow, latter clothed with long yellow hairs. First and second joints of antennae red, first being twice as long as second and entirely black-haired; third joint black, elongate conical, gradually tapering to a very thin styliiform point, which forms apical part; latter reddish at end, with minute terminal bristle. Thorax black, grey dusted, with yellowish tomentum, and yellow hair in front and on sides; all macrochaetae yellow; pleurae black, with pale grey dust, entirely clothed with yellowish hair and quite devoid of white hair, or only with a small tuft on upper border of mesopleura in ♀; metapleural tuft likewise yellow. Scutellum red, narrowly black on base and sides, with yellow tomentum and a little black tomentum in middle at base, clothed with yellow hair, and with thin yellow bristles on hind border. Squamae pale brown, with dirty yellowish fringe; halteres yellow, knobs paler. Abdomen black, broadly red on sides and also at tip in ♂; hair on base and sides pale yellowish, but on sides of second, third and fifth segments there are small tufts of black hair; last segment whitish-haired; tomentum on middle of tergites black, but second, third and fourth segments clothed with yellow scales, forming usual bands, which in the other species are white; fifth segment with black transverse band,

being almost entirely clothed with black scales; venter black, grey dusted, with narrow yellow hind borders to segments in ♀, almost entirely red, with black base, in ♂; venter clothed with yellowish hair, but without white bands. ♂ genitalia red, pale yellowish-haired; spines on ovipositor yellow, long, thin and straight. Legs black, with yellow tibiae which are black at tip, more broadly in case of hind pair; front femora narrowly yellow at tip; legs clothed with yellowish scales, and on coxae and femora with pale yellowish hair; spines black, three or four on middle, four or five on hind femora; front tibiae smooth, remaining tibiae with long spicules; claws black. Wings with black basal comb, which, however, is clothed with yellow scales, thus appearing yellow; base of wings broadly yellow as far as base of basal and of anal cells; "window-panes," at least inferior ones, whitish-hyaline, and all very broad, those in middle sometimes confluent, forming a hyaline band, which divides dark portion into two, exterior of which includes "window-panes" on middle cross-vein; discoidal cell hyaline at base, afterwards filled with brown to apical fifth, which is hyaline; third and fourth posterior cells broadly hyaline at base and at end, hyaline area at base being more whitish; anal cell and axillary lobe with whitish base and greyish distal extremity. Second longitudinal vein originating opposite middle cross-vein and with dip at end not very deep; upper branch of cubital fork with a recurrent veinlet at base; first posterior cell narrow at base, broad in middle and narrowed at end; middle cross-vein situate a little beyond middle of discoidal cell, which is slightly less than twice as long as second posterior cell, and has its terminal cross-vein faintly S-shaped; third posterior cell as long as fourth, contact of latter with discoidal cell being punctiform, so that in broad whitish lower "window-pane" veins form a cross; second basal cell at end about twice as broad as discoidal cell; anal cell much narrowed at end. Alula pale yellowish, with yellowish fringe; axillary lobe short and broad, with dark basal fringe; veins yellow, darkened towards tips; apical third of wing greyish hyaline.

171. *Thyridanthrax ternarius*, sp. nov.

Closely allied to *Th. subperspicillaris* and *Th. perspicillaris*, but differing in discoidal cell being hyaline only at end, and in three submarginal cells being regularly present.

The character of the three submarginal cells seems to be constant; only one specimen in about thirty which have been examined has the recurrent veinlet not united with the second longitudinal vein. The species may be mistaken for an *Exoprosopa*; but, even overlooking the fact that the general facies and coloration place it in the *Th. fenestratus* group, the form of the third antennal joint is not at all that of an *Exoprosopa*. The possibility that the present species may be the *Exoprosopa caffra* of Wiedemann and of the catalogues is not excluded.

Type ♂, type ♀ and many additional specimens from the Gambia (Farafeni, Soma, Mandina) March–April, 1911 (*Dr. J. J. Simpson*). The species, however, seems to be widely distributed and rather common, since the British Museum possesses further material from: N. Nigeria, River between Shongo and Konko, 31 March, 1912 (*Dr. J. W. Scott Macfie*), and precise locality unknown (*Dr. J. J. Simpson*); Kenya Colony, Ilala, Maramas District, 14 miles E. of Mumias, 4,500 ft., June 18–21 (*Dr. S. A. Neave*), Nakuru, January, 1913 (*Dr. B. L. Van Someren*), and Moyale, 7–16 October, 1911 (*R. J. Stordy*); Cape Province, Union of S. Africa, Deelfontein (*Col. Sloggett*), and Cradock, April, 1914 (*Miss J. Brincker*); the Transvaal, Piet Retief, Mkabela Mt., 5,000 ft., 6 September, 1903 (*Captain R. Crawshaw*); Arabia, Sheikh Othman, 17 March, 1895 (*Lt.-Col. C. G. Nurse*); and N. Rhodesia, Kasempa District, Kitubwe River, 3 September, 1907 (the late *Dr. A. Yale Massey*: in this specimen the wings are entirely black at the base).

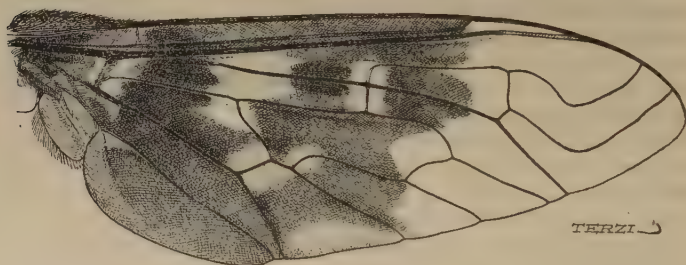


FIG. 18.—*Thyridanthrax ternarius*, sp. nov. Wing of ♀. $\times 7$.

♂♀. Length of body 9–13 mm. (usually 10–12 mm.); length of wing 9–13 mm.; wing-expanse 21–30 mm.

Head black, but face and anterior part of frons red, former being sometimes black in middle; jowls and mouth borders pale yellow. Clothing of frons, face and occiput as in *Th. incipiens*. Antennae with first joint red, black-haired; second much shorter, dark reddish or even black; third more than twice as long as first two joints together, black, narrow at base, elongate conical, tapering to a long, thin point, which bears no distinct style. Proboscis black, projecting; palpi yellow and yellow pilose. Thorax and scutellum as in *Th. subperspicillaris*, with yellow bristles, and with white pleural stripe broad and complete; metapleural tuft whitish; squamae blackish-brown, with white fringe; halteres yellowish, with paler knobs. Abdomen red, with more or less black base in middle, extending to the fourth, or in ♀ even to fifth segment; colour and the arrangement of covering exactly as in *Th. perspicillaris*, even on venter. Legs black, with tibiae more or less broadly yellowish, but those of

hind legs usually black; scales whitish or pale yellowish; spines black, on middle femora two or three, on hind femora five or six; front tibiae smooth; claws black. Wing-pattern very like that of *Th. subperspicillaris*, and also with small and infuscated "window-panes," but base narrowly yellow as in *Th. perspicillaris*; dark pattern extending much further outwards, reaching end of auxiliary vein and filling four-fifths of discoidal cell (apex of which is usually hyaline), two-thirds of third posterior cell, three-fourths of fourth, and whole of anal cell and of axillary lobe. Venation similar in disposition; cross-vein dividing first submarginal cell into two running perpendicularly in such a way as to reach second longitudinal vein at a right angle; third posterior cell very long, its contact with discoidal cell being ten times and more as long as that of fourth, but contact of latter never punctiform, therefore lower "window-pane" without a cross formed by veins. Basal comb large, black, with sparse yellow tomentum; alula narrow, with whitish or fuscous fringe, continued on to base of axillary lobe.

172. *Thyridanthrax laetus*, Loew (1860).

A very distinct species on account of its peculiar coloration, and usually placed in the genus *Exoprosopa*, but belonging here notwithstanding its three submarginal cells as in the case of the preceding species, owing to the shape of the antennae and of the claws.

The British Museum possesses: a ♀ from Nyasaland Protectorate, N. Nyasa, Makongwa, 12 November, 1909 (*Dr. J. B. Davey*); a ♂ from Kenya Colony, Voi, 8-10 February, 1912 (*Dr. S. A. Neave*); and two ♂♂ and one ♀ from N.-W. Rhodesia, Chilanga, 4,000 ft., 13-20 October, 1913 (*F. V. Bruce-Miller*).

Genus 28. **LITORRHYNCHUS**, Macquart (1840).

This genus is a very peculiar one, and is a characteristic element of the Ethiopian fauna; the American genus *Stonyx*, Osten Sacken, which by its author was believed to be identical, is very different, being distinguished *inter alia* by the absence of the long and sharp basal tooth on the claws. In 1912 I published a description of the genus; the venation, however, is subject to variation, since there are species in which the basal vein of the second posterior cell is shorter than the basal vein of the third, though always in line with it. I am now able to introduce another character, hitherto overlooked, viz. that the front tibiae are beset with spicules (as in *Stonyx*), which are always distinct, and often very numerous and strongly developed. I am aware that there are species of true *Exoprosopa* with spicules on the front tibiae, but the character is very useful as a means of distinguishing true *Litorrhynchus* from certain species of *Exoprosopa* which have a very similar wing-pattern.

The genotype of *Litorrhynchus* is somewhat ambiguous in character, having a wing-pattern similar to that of *Exoprosopa ignava*, in which the proboscis is sometimes elongate, as stated by Miss Ricardo on p. 98 of her paper on South African Diptera.

The species of the present genus are extremely numerous, and are often very beautiful flies of large size; they are remarkably uniform in facies, so that I am more than ever convinced that the genus is a very natural one. The group comprising the larger species, with reddish bodies and yellowish wing-markings, is especially interesting; these flies closely resemble dried leaves or bark, a fact certainly connected with their mode of life, which is as yet unknown. In my 1912 paper I divided the genus *Litorrhynchus* into two groups, but it is impossible to distinguish these by means of venational characters. *L. corticeus*, *L. corticalis*, *L. suberosus*, *L. siccifolius*, *L. macropterus*, *L. basalis*, *L. evanescens*, and *L. dentiferus* are typical; the remainder, such as *L. nyasae*, etc., lead up to the black species. A second group is formed by *L. maurus* and *L. pseudocollaris*; a third group by *L. tollini*, *L. nyasae*, *L. infuscatus* and *L. ricardoi*; a fourth group by *L. erythraeus* and all the remaining species, and this group seems to be the only one that occurs in Central Africa. The species before me may be distinguished as follows:—

- 1 (32). Second posterior cell much narrower than third on wing-border, vein between them being strongly bent towards fore border of wing; basal vein of second posterior cell as long as basal vein of third posterior cell. If one or other of these two characters be not clearly recognisable, colour of body and of wing-pattern is mainly reddish-brown, not black, proboscis is mainly red above, and palpi are yellow or reddish.
- 2 (11). First posterior cell closed, and provided with a long stalk.
- 3 (4). Species of smaller size; wing-pattern of a more blackish colour, being brownish only towards fore border; marginal cell filled with fuscous to end; second posterior cell at end only a little narrower than third. *infuscatus*, sp. nov.
- 4 (3). Species of larger size; wing-pattern entirely reddish-brown; marginal cell hyaline at end; second posterior cell much narrower than third at end.
- 5 (10). Thorax with no distinct black stripes on back; middle cross-vein situate nearer middle of discoidal cell, beyond base of third posterior cell, therefore basal dark pattern of discoidal cell ending at a distance from middle cross-vein not longer than length of cross-vein itself.
- 6 (9). Last abdominal segment in ♂ with a red fringe.
- 7 (8). Marginal cell very narrowly hyaline at end; abdomen entirely reddish, with a rounded black median spot on second and third segments. *corticeus*, Bezzi.
- 8 (7). Marginal cell broadly hyaline at end, hyaline part being about thrice as long as in preceding species; abdomen with apical portion entirely black. *corticalis*, var. nov.
- 9 (6). Last abdominal segment with black fringe; abdomen dark reddish, with black median spots even on fourth, fifth and sixth segments; hyaline part of marginal cell only twice as long as in *L. corticeus*.
phloeochromus, Bezzi.
- 10 (5). Thorax reddish on back, with three very distinct black longitudinal stripes; middle cross-vein nearer base of discoidal cell, being just opposite extreme end of third posterior cell, therefore basal dark

pattern ending at a distance from middle cross-vein longer than cross-vein itself; last abdominal segment in ♂ with a black fringe.

suberosus, sp. nov.

- 11 (2). First posterior cell open.
- 12 (23). Wing-pattern reddish or yellowish, like main part of body; metapleural tuft entirely reddish or yellowish.
- 13 (20). Species of larger size; thorax not distinctly striped; first posterior cell much narrowed at tip, as narrow as anal cell at end.
- 14 (15). Marginal cell filled with fuscous to end; thoracic macrochaetae yellowish or reddish. *siccifolius*, sp. nov.
- 15 (14). Marginal cell more or less broadly hyaline at end; thoracic macrochaetae entirely black.
- 16 (19). Middle band on wings extending to hind border; dark pattern in marginal cell ending beyond cross-vein dividing first from second submarginal cell; second posterior cell much narrowed at end.
- 17 (18). Dark basal band on wings convex outwardly; dividing vein between first and second submarginal cells only gently curved.
macropterus, Loew.
- 18 (17). Dark basal band straight outwardly; dividing vein between first and second submarginal cells bent at an angle in middle, and there usually provided with a short stump. *basalis*, Ric.
- 19 (16). Middle band usually not extending to hind border of wings; dark pattern in marginal cell ending before above-named vein; second posterior cell less narrowed at end. *evanescens*, Bezzi.
- 20 (13). Species of smaller size; thorax with distinct black longitudinal stripes; marginal cell very narrowly hyaline at end; first posterior cell less narrowed at tip, and much broader than anal cell at end.
- 21 (22). First posterior cell broadly hyaline at end; second posterior cell much narrowed at end; thorax with three black stripes and with black macrochaetae. *ricardoi*, Bezzi.
- 22 (21). First posterior cell filled with fuscous almost to end, thus forming a projecting dentiform point; second posterior cell less narrowed at end; thorax with two black stripes and with yellowish macrochaetae.
dentiferus, Bezzi.
- 23 (12). Wing-pattern blackish-brown or even black, like main part of body; metapleural tuft often formed by black bristles; abdomen fringed on sides with dense black hair.
- 24 (27). Squamae black, with black fringe; third abdominal segment with a rounded white spot on each side; species of larger size.
- 25 (26). Middle band on wings broad at end, filling almost whole of second and third posterior cells; basal vein of second posterior cell longer than that of third; metapleural tuft with black and red bristles.
maurus, Thunbg.
- 26 (25). Middle band narrow at end, filling only upper angle of third posterior cell; basal vein of second posterior cell shorter than that of third; metapleural tuft entirely red. *pseudocollaris*, sp. nov.
- 27 (24). Squamae pale brownish, with white or yellowish fringe; third abdominal segment with a white stripe on each side; species of smaller size.
- 28 (29). Marginal cell hyaline at end; a hyaline spot in middle of first posterior cell. *tollini*, Loew.
- 29 (28). Marginal cell filled with black to end, and black area extending even a little beyond.
- 30 (31). Middle band on wings broad at end, filling second and third posterior cells at tips; metapleural bristles mainly reddish or golden coloured, with only a few black ones intermingled above. *nyasae*, Ric.
- 31 (30). Middle band narrowed at end, filling only a part of third posterior cell; metapleural bristles entirely black, or only with a few golden ones below. *argyrolepis*, Bezzi.
- 32 (1). Second posterior cell at end not or only a little narrower than third, vein between them being less bent; basal cross-vein of second

- posterior cell always shorter than basal vein of third; colour of body and wing-pattern mainly black or blackish; first posterior cell always open; proboscis and palpi entirely black.
- 33 (34). Marginal cell filled with black to end; very small species, with less distinct basal tooth on claws. *repletus*, Bezzi.
- 34 (33). Marginal cell more or less broadly hyaline at end; species of medium size, with well-developed basal tooth on claws.
- 35 (38). Metapleural tuft consisting mainly of reddish bristles, only rarely with a few black ones intermingled.
- 36 (37). Third antennal joint elongate, as long as or longer than terminal style; venter yellowish. *metapleuralis*, sp. nov.
- 37 (36). Third antennal joint short, much shorter than style. *perplexus*, Bezzi.
- 38 (35). Metapleural tuft consisting entirely of black bristles, or with only a few reddish ones intermingled.
- 39 (40). Black wing-pattern is very extensive, filling anal cell to end; hyaline spot in centre of discoidal cell very small, and almost entirely surrounded with black; venter black. *dilatatus*, Bezzi.
- 40 (39). Anal cell and axillary lobe more or less broadly hyaline at end; hyaline spot in discoidal cell broader, and broadly united with hyaline indentation on hind border.
- a (b). Fuscous area in marginal cell continued along upper border of hyaline part of same cell, in shape of an ill-defined stripe prolonged along first longitudinal vein to end of second vein. *obumbratus*, sp. nov.
- b (a). No such prolongation, or only very short beginning of it, or whole cell infuscated nearly to its extreme end.
- 41 (42). Middle black band not reaching hind border of wing. *suspensus*, sp. nov.
- 42 (41). Middle band reaching hind border.
- 43 (46). Only extreme apex of anal cell and of axillary lobe hyaline; hyaline spot in discoidal cell small, its longitudinal diameter being only one-fourth as long as length of cell.
- 44 (45). Marginal cell broadly hyaline at end, terminal dip in second longitudinal vein being entirely hyaline. *erythraeus*, Bezzi.
- 45 (44). Marginal cell narrowly hyaline at end, half of terminal dip in second vein being included in black pattern. *productus*, sp. nov.
- 46 (43). Anal cell and axillary lobe rather broadly hyaline at end; hyaline spot in discoidal cell broader, occupying half of length of entire cell. *allothyris*, Speis.

Group 1. *L. macropterus*.

173. *Litorrhynchus corticeus*, Bezzi, var. *corticalis*, var. nov.

L. corticeus, a large and beautiful species, differs markedly from the other known members of the present group in having a stalked and closed first posterior cell.

The species was described by me from *Erythraea* (Keren), and the type is in the Budapest Museum. The British Museum possesses two specimens which are somewhat different, but seem to belong to the same, widely distributed form; I think it advisable to distinguish them as a variety under the above name.

The variety is distinguished by the abdomen being more or less black beyond the middle, and by the marginal cell being much more broadly hyaline at the end, the brown area reaching only to the cross-vein dividing the first from the second sub-marginal cell, or a little further. Length of body 16-18 mm.;

length of wing 18–20 mm.; length of proboscis 9–10 mm. ♂ from Abyssinia, Ardaga, 3 September, 1908 (*Dr. R. E. Drake-Brockman*); fourth and fifth abdominal segments entirely black; brown area of marginal cell ending exactly on a level with cross-vein; the seventh abdominal segment red and bearing a red fringe, like type. ♀ from Uganda, Keri's Village, Aswa, Madi Country, 11 November, 1901 (*C. S. Betton*); fourth to seventh abdominal segments, except hind borders, entirely black; seventh fringed with black and red hair, latter predominating; spines on ovipositor yellowish-red; in wings general tint darker; brown area in marginal cell ending a little beyond cross-vein; the middle band convex outwardly at its end near hind margin of wing. These differences can be only sexual; the frons is of equal width in both sexes.

In both the specimens described the blackish eye-like spot at the base of the wings, before the whitish-hyaline praediscoidal spot, is well developed—especially so in the ♂. Curiously enough, when the wings are in the natural position, half extended and diverging, the two spots and the entire pattern produce the effect of the outline of a head with its eyes, as is to be seen in the case of certain moths, although less distinctly.

174. *Litorrhynchus suberosus*, sp. nov.

A very pretty species, closely allied to the preceding, but distinguished by the somewhat different wing-pattern, and by the tip of the abdomen being fringed with black hair.

Type ♂, a rather damaged specimen from the Gambia, British Combo, Busumbulu, November, 1902, "caught in Government Compound" (the late *Dr. H. E. Dutton* and *Dr. J. L. Todd*).

♂. Length of body 15 mm.; length of wing 17 mm.; length of proboscis 9 mm.

Head reddish; occiput with a stripe of whitish scales near eyes; postvertical furrow deep, but very narrow; ocellar tubercle small and but little prominent, rather distant from vertex; frons broad, at vertex occupying one-fifth of head, clothed with short hair, which is black near ocelli and in middle, and pale near antennae, and also with dense yellowish scales. Face broad, gently rounded, bare in middle, with short yellowish hair on sides; jowls narrow and bare, like chin; mouth borders yellowish. Eyes brown, with facets of equal size, with indentation not very pronounced, and with short bisecting line. Antennae entirely reddish; first joint twice as long as second, clothed with short hairs, which are black above and yellowish beneath; third joint conical, as long as first two joints together; terminal style reddish, as long as third joint. Proboscis very long, red above, black at tip and below; palpi yellow, long, pointed and bent upwards, clothed on under side with long, dense yellowish hairs. Thorax reddish; in middle of back with three very well-marked, rather broad, black longitudinal stripes, united in front and

fused together posteriorly so as to form a black spot before scutellum; back clothed with short, dense, reddish or yellowish scaly tomentum, and on each side with a stripe of whitish hair above base of wing; collar yellowish; pleurae with two tufts of coarse, reddish hair, that on propleura with some black hairs beneath; metapleural bristles entirely reddish; sternopleura short-haired, hair reddish with a few black hairs intermingled; all bristles black. Scutellum reddish, clothed with tomentum like that on thorax, and with a row of ten to twelve strong black bristles on hind border. Squamae brown, with golden-coloured fringe; halteres brown, with knobs pale yellowish above. Abdomen entirely reddish, but appearing black in middle and at tip owing to being clothed with dense black scales; second segment with a rounded median black spot; third segment with a broad band of white scales on each side on hind border, and apparently with a small median rounded spot of same colour; hair on sides of first segment white and rather long, remaining black, becoming shorter and partly yellow beyond second segment; hair on hind borders of terminal segments black, that on seventh segment forming a black fringe; genitalia red, yellowish-haired; venter entirely reddish, with golden-yellow hair. Legs entirely red, with black hair and spines, and sparse yellowish hair; front legs wanting in case of type; middle femora on anterior side with five or six very short spines; hind femora beneath with a complete row of ten to twelve spines; hind tarsi rather thick; claws black, with reddish base and long, pointed yellow basal tooth. Wings as in *L. corticeus*, and with same blackish, eye-like, basal spot; marginal cell narrowly hyaline at end, brown area only reaching middle of terminal dip in second vein; hyaline spot in discoidal cell narrower, brown area at base being limited by an oblique line, which reaches fourth vein at a distance from middle cross-vein about twice as long as cross-vein itself; outer edge of middle band concave, its lower end straight and situate exactly on apex of third posterior cell. Praediscoidal spot broad, subquadrate, and whitish hyaline; above it, in first basal cell, a broad yellowish spot. Venation as in *L. corticeus*, but middle cross-vein nearer base of wing, just opposite end of third posterior cell. Basal hook black; basal comb with black bristles at end, but entirely clothed with yellowish scales, except near base where there are whitish ones; veins yellow, reddish towards base; alula infuscated, with long dark fringe, continued on to base of axillary lobe, which is rather broad.

175. *Litorrhynchus siccifolius*, sp. nov. •

A pale-coloured species of large size, readily distinguishable from all the allied forms owing to having yellow macrochaetae on the thorax, and the marginal cell filled with brown to the end.

Type ♀ and two additional specimens of the same sex from

the Gambia, Patchari, 22 March, 1911, Ballangar, 13 March, 1911, and Sukuta, 27 March, 1911 (*Dr. J. J. Simpson*).

♀. Length of body 16–18 mm.; length of wing 17–19 mm.; length of proboscis 6–8 mm.

Head, its appendages and covering of hair and scales as in preceding species; third antennal joint with attenuate portion narrower and styliform, and with style a little longer than joint itself; proboscis proportionally shorter, and red above only at base. Thorax pale reddish, bare on back, with yellowish scales and devoid of black stripes; all macrochaetae reddish; collar yellowish; on pleurae black hair entirely wanting, even in notopleural region; metapleural tuft yellowish. Squamae brownish-red, with pale yellowish fringe; halteres yellowish, with pale knobs. Scutellum like thorax, but bristles (sixteen to eighteen) on hind border black, or only first (external) pair yellowish. Abdomen of same colour as thorax, second and third segments each with a very small median black spot at base; abdomen clothed with pale yellowish scales, which appear to form broad transverse bands on all segments; first segment alone with long whitish hair on sides, remainder with very short yellowish hair; terminal segments with short black hair on hind borders, at least on sides; fringe on seventh segment mainly black. Spines on ovipositor yellow, long and thin; venter entirely pale reddish, with yellowish hair and scales. Legs entirely pale reddish-yellow, only tarsi somewhat infuscated owing to dense black pubescence; all spines black, those on front tibiae rather numerous and long; middle femora with two long spines, hind femora with only two or three long spines at tip; front tibiae about as long as femora; front tarsi short, very thick and very densely pilose; hind tarsi rather long and thin; claws black, with reddish base and long, reddish, pointed tooth. Wing-pattern resembling a dried leaf in colour, but bands partly darkened; base broadly pale yellowish, with eye-like spot indistinct; praediscoidal spot small and narrow, yellowish spot before it in first basal cell very faintly developed. Shape of wing-markings as in allied species, outer border of basal band being rather straight, and that of middle band concave but rather dentate; marginal cell completely filled with dark colour to end; below it upper corner of second submarginal cell also broadly filled; middle band making a broad contact with hind border, filling almost whole of end of third posterior cell, and often also a small portion of second; basal band leaving tip of anal cell and of axillary lobe narrowly hyaline. Basal hook brown; basal comb dark yellowish, with black bristles; veins reddish-yellow at base; alula yellowish, like base of axillary lobe, with yellowish fringe. Second longitudinal vein originating opposite middle cross-vein, its terminal dip very slightly marked; first posterior cell much narrowed at end; discoidal cell of usual shape, with middle cross-vein situate before its middle, and beyond end of third posterior cell;

second posterior cell at tip half as broad as third, its basal vein as long as that of third; anal cell at tip a little narrower than first posterior cell.

176. *Litorrhynchus basalis*, Ricardo (1901).

Very closely allied to *L. macropterus*, Loew, but distinguished by the characters shown in the table. The species is already known from Nyasaland, and the British Museum possesses two ♂♂ from Belgian Congo, Katanga District, 1915 (*Dr. J. Schwetz*).

177. *Litorrhynchus dentiferus*, Bezzi (1912).

A medium-sized species, differing from any other owing to the middle band on the wing sending a dentiform projection down into the first posterior cell.

Described in the ♂ sex from W. Nyasa: the British Museum collection also includes a smaller ♀ specimen, measuring only

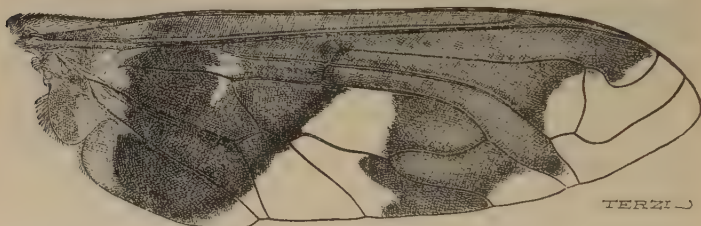


FIG. 19.—*Litorrhynchus dentiferus*, Bezzi. Wing of ♂. $\times 4\frac{1}{2}$.

12 mm. in length (length of wing 14 mm.), from Portuguese East Africa, Zambesi, Caia, 20 August, 1910 (*Dr. H. Swale*). It is in all respects very like the ♂, even in the breadth of the frons; the spines on the ovipositor are yellow, long and thin. In the present species there is no trace of the basal, black, eye-like wing-spot, which is so distinct in the case of the larger forms.

Group 2. *L. maurus*.

178. *Litorrhynchus maurus*, Thunberg (1827).

A species of large size, with the venational characters of the preceding group, but distinguished by the black colour of the body and wing-pattern.

L. maurus, which seems to be common in South Africa, was described at an early date by Thunberg under the name *Tanyglossa maura*. It was unknown to Wiedemann; but Macquart in 1840 mentioned it as *Litorrhynchus collaris*, confusing it with the Oriental and quite distinct *Anthrax collaris*, Wied., and stating, as I think erroneously, that it is common in Senegal. In 1860 Loew described the same species under the name *Exoprosopa rostrata*; and under the same designation it was recorded

by Karsch in 1886, from Pungo Andongo. The species mentioned by me in 1912 under the same name is a very different one, and belongs to the *L. erythraeus* group.

L. maurus is represented in the British Museum by a ♂ from N.-W. Rhodesia, Chilangola River, near Chilanga, 20 October, 1913, 4,000 ft., "on mud by river" (*R. C. Wood*): there are also two old specimens from S. Africa (*Dr. A. Smith*), and one from the Cape Province, King Williamstown District (*Miss Barrett*).

In the present species the spicules on the front tibiae are short, but distinct; and the basal band on the wings extends almost to the end of the anal cell, only the extreme apex of this and of the axillary lobe being hyaline.

179. *Litorrhynchus pseudocollaris*, sp. nov.

Closely allied to the preceding species, but distinguished by the different shape of the discoidal cell, and by the middle band on the wings being much narrowed towards the hind border of the wing.

Type ♂ and another ♂ from Belgian Congo, Katanga District, Kabinda, 1915 (*Dr. J. Schwetz*); type ♀ and a ♂ from Katanga, Kambove, 4,000–5,000 ft., June, 1907 (*Dr. S. A. Neave*); a ♂ from Nyasaland (*R. Drummond*); and another from Nyasaland, Central Angoniland (*J. G. Morgan*). In general shape and coloration the present species closely resembles the Indian *L. collaris*, Wied., which also has spinose front tibiae, but having a short proboscis, its position in the present genus is doubtful. At any rate, *L. pseudocollaris* is distinguished from *L. collaris* by its larger size, entirely reddish metapleural tuft (black in *L. collaris*), much narrower second posterior cell, middle black band on the wings reaching the hind border and chiefly by its long proboscis. Wiedemann himself thought it "most probable" that his *A. collaris* was from the Cape of Good Hope, and Macquart even confounded it with *Tanyglossa maura*, Thunb., as stated above. Subsequently, however, in 1855, Macquart described the Indian species under the name *Exoprosopa binotata*, which is without any doubt a synonym of *L. collaris*, Wied. *L. pseudocollaris* cannot be Wiedemann's species, even supposing that this is really an African one, because Wiedemann says that the abdomen has black hairs at the base, that the legs are black, like those of *A. lar*, and that the middle band on the wings is abbreviated.

♂♀. Length of body 16–17 mm.; length of wing 18–19 mm.; length of proboscis 6–7 mm.; wing-expanse 42–45 mm.

Head reddish, black only on vertex beyond ocelli; a complete stripe of whitish scales along eye-borders, occiput being clothed elsewhere with reddish scales; central fringe blackish; frons and face with black erect hair, and with sparse and scattered, yellowish scales; antennae with first and second joints reddish and black-haired (third joint wanting in case of types); proboscis

entirely black; palpi blackish-brown, dark-haired. Thorax as in *L. maurus* or *L. collaris*, with bright orange-red collar and notopleural tufts; almost all remaining hair on pleurae black, only a small pteropleural tuft and entire metapleural tuft being red; bristles are black; squamae black, with black fringe; plumula in form of a white tuft; halteres black, knobs with a small pale spot at tip. Scutellum black-scaled (hind border more or less broadly red) with black hair and numerous, stout, long black bristles on hind border (scutellum entirely red in *L. maurus*, and entirely black in *L. collaris*). Abdomen black, with second segment broadly red on sides; abdomen clothed with black scales; hair on sides black, except on first segment where it is red; pair of spots of white scales on third segment very conspicuous and eye-like; sixth segment with a band of white scales near base (in *L. maurus* hair at base of abdomen entirely white on sides, while in *L. collaris* it is entirely black). Genitalia black and black-haired, sometimes with red hair; venter black, with

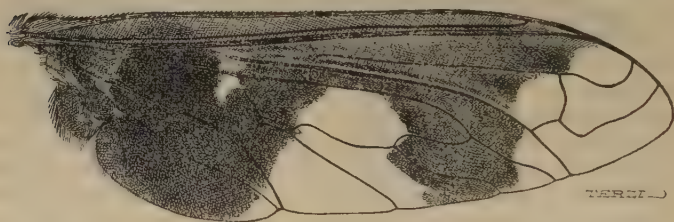


FIG. 20.—*Litorrhynchus pseudocollaris*, sp. nov. Wing of ♂. $\times 4\frac{1}{2}$.

reddish base and clothed with blackish hair. Legs dark reddish but clothing of black hair and black scales makes them, especially tibiae and tarsi, apparently black; front legs strong, with tibiae as long as femora, beset with well-developed spicules, and with tarsi short, thick and densely pilose; middle femora with two strong spines near middle; hind femora with a complete row of nine or ten spines beneath; all spines are black; claws entirely black, like long and pointed basal tooth. Wings as in *L. maurus*, but while second posterior cell at end is only half as broad as third, its basal vein is much shorter than basal vein of third; in *L. collaris* second posterior cell is very small, but at end is equal in breadth to third, and at base to half of breadth of third; first posterior cell narrow and constricted at end; middle cross-vein situate on basal third of long discoidal cell; second longitudinal vein originating opposite middle cross-vein, and with moderately deep dip at end; anal cell greatly narrowed at tip. Wings black to base; exterior margin of basal band straight, and anal and axillary cells hyaline at end as broadly as in *L. collaris*, and much more broadly than in *L. maurus*; middle band shaped as in *L. erythraeus* and allied species, becoming

narrower at end, and filling only extreme upper angle of third posterior cell; marginal cell broadly hyaline at end, black area ending a little beyond cross-vein. Veins black, but dark reddish towards base; basal hook and basal comb black, latter with dark yellowish tomentum; alula black, with dark fringe. Praediscoidal spot small, whitish-hyaline, with a much broader yellowish spot above it in the first basal cell. Middle cross-vein, as in *L. collaris*, devoid of pellucid spot seen in wing of *L. maurus*.

Group 3. *L. tollini*.

180. *Litorrhynchus infuscatus*, sp. nov.

A very distinct species, allied to *L. nyasae*, Ric., but distinguished by its different wing-pattern, and also differing from it and from any other species of the present group in the first posterior cell being closed and stalked.

Type ♂ from Uganda, Hoima-Kampala Road, 3 January, 1912.

♂. Length of body 12 mm.; length of wing 14 mm.; length of proboscis 5 mm.

Head entirely reddish; occiput relatively short, with narrow postvertical furrow, short blackish hair and a complete band of dense white tomentum round eye-borders. Eyes dark brown, with uniformly small facets, shallow indentation and long bisecting line; ocellar tubercle small and low. Frons broad, occupying one-fifth of head at vertex, with short, erect, blackish hair, and dense, dark yellowish scales, which become brighter near widely separated antennae, and passing between them are continued on to gently rounded face, which has black hair on sides; jowls narrow; mouth borders yellow; chin short and nearly bare. Antennae short; first two joints reddish, clothed with black hairs; third joint black and conical, with a black style longer than itself. Proboscis red above, black below and at tip; palpi pale yellowish, long, thin, pointed and curved upwards, with long yellowish hairs beneath. Thorax dark reddish, clothed on back with dense, chestnut-coloured scales; collar yellow; hair on sides short, black in front of and whitish above base of wings; bristles black; pleurae with red hair above, along notopleural line and on metapleura, and with yellowish hair below, but with a few black hairs on mesopleura. Scutellum like thorax, with black bristles on hind border. Squamae brownish-yellow, with golden-yellow fringe; halteres black, with pale knobs. Abdomen like thorax and clothed with similar scales; hair on sides of first segment pale reddish, that on second and third segments black and very short, remaining segments bare; white scales present only on sides of first segment, and on a rather broad stripe near each end of hind border of third segment; sixth and seventh segments red, with sparse black scales, and apparently also with very sparse white scales; genitalia red, black-haired; venter dark reddish, with pale yellowish, and at

end with reddish hair. Legs entirely red, with black hair, black spines and dark yellowish scales; middle femora with two, hind femora with seven or eight spines beneath; front tibiae as long as femora, with thin, short, but distinct spicules; front tarsi short and thick, thinly pilose; hind tarsi with dense black pubescence; claws black, with sharp basal tooth. Wing-pattern like that of *L. nyasae* in colour and shape, but more extensive; basal band filling anal cell and axillary lobe almost to end, only extreme tip of each remaining hyaline; middle band filling whole of second rather more than distal half of third posterior cell (except hind border of latter), and almost whole of closed first posterior cell, only anterior border of tip of latter being narrowly hyaline; hyaline indentation on hind border therefore considerably narrower than in *L. nyasae*; black area on anterior border terminating exactly at end of marginal cell, with a broad black patch in anterior basal part of second submarginal cell in contact with its distal extremity; middle cross-vein without hyaline spot; praediscoidal spot small, with no distinct spot above it in the first basal cell; base broadly yellow, with broad, blackish, basal patches. Basal hook black; basal comb with black bristles, but yellowish tomentum; veins yellowish; alula and extreme base of axillary lobe yellowish-grey, with dark fringe. Second longitudinal vein originating opposite middle cross-vein, and with a deep dip at end; stalk of first posterior cell as long as middle cross-vein, which is situate on first third of discoidal cell; second posterior cell at end only a little narrower than third (because first posterior cell is closed), but its basal vein longer than that of third, and vein between them strongly bent forwards; anal cell narrowly open.

• 181. *Litorrhynchus tollini*, Loew (1863).

A medium-sized species, showing affinity with *L. nyasae*, but distinguished by the marginal cell being hyaline at the end, and by a tendency towards the formation of a hyaline spot near the middle of the first posterior cell.

Of this species, the type of which is a ♂ from the Orange Free State (Bloemfontein), the British Museum possesses a series of specimens of both sexes from: the Cape of Good Hope (*ex coll. W. W. Saunders*); Cape Province, Deelfontein (*Col. Sloggett*); and Rhodesia, Bulawayo, 1909 (*E. C. Chubb*). In 1912 I erroneously referred to the present species a series of specimens from the Nyasaland Protectorate; these on the contrary certainly belong to the *L. erythraeus* group. The true *L. tollini*, as here interpreted, has the venation of the first group, and seems to be a not uncommon and exclusively South African fly. The following additions to Loew's brief diagnosis may be found useful.

Occiput on eye-borders with yellowish or whitish scales; frons and face with black hair and yellowish scales. Antennae with

first and second joints red, first being more than twice as long as second, and having entirely black hair; third joint black, conical, as long as first; style black, thin and very long, considerably longer than third joint. Proboscis red^a above, black below and at tip, only 4-5 mm. in length; palpi yellowish, with long dark hairs beneath. Hair on back of thorax black; all bristles on thorax and scutellum black; metapleural tuft with red and black bristles, latter predominating in upper part. Squamae dark brown, with golden yellow or whitish fringe; halteres black, with knobs paler at tip. Abdomen black, sides and tip red; hair on abdomen black, except on sides at base; last two segments also clothed with white scales; ♂ genitalia red, black-haired; spines on ovipositor yellow, long and straight; hair and scales on venter pale yellowish or whitish, short black hair present only in median line. Legs with black hair and spines, and pale yellowish scales; front tibiae stout, a little shorter than femora, with numerous, rather long spicules; middle femora on anterior side with one or two long spines; hind femora below with a complete row of nine or ten spines; front tarsi short, thick, thinly pilose; claws black, with pointed, black, basal tooth; hind tarsi not thickened. Venation typical of first group; second vein originating opposite middle cross-vein, and with a deep dip at end, its terminal convex dip preceded by a shorter concave one; first posterior cell not much narrowed at end; middle cross-vein situate on first third of long, narrow discoidal cell; second posterior cell at end only one-third of third, its basal vein on contrary longer than that of third, and very S-shaped, second posterior cell thus having a very peculiar shape, being narrow, with a basal, lobe-like prolongation; anal cell rather broad at end. Wing-pattern like that of *L. nyasae*, but marginal cell narrowly hyaline at end; basal band with a projection on fifth longitudinal vein, just opposite that of middle band; praediscoidal spot and spot above it in first basal cell unusually broad and quadrate; middle band broad at end, filling whole of third and part of second posterior cell; whitish-hyaline oval spot in first posterior cell situate just before end of discoidal cell. Wings black to base, with only a narrow transverse band of yellowish colour over basal cross-veins; anal cell and axillary lobe rather broadly hyaline at end; alula blackish at base, yellowish at end, like extreme base of axillary lobe, and provided with a dark fringe.

182. *Litorrhynchus nyasae*, Ricardo (1901).

A rather small species, easily distinguishable owing to its peculiar wing-pattern, the marginal cell being filled with brown to the end, and the brown of the wing-border even extending a little beyond. In addition to a numerous series of examples of this species, all of which, including the types, are from Nyasaland, the British Museum possesses a solitary ♀ from Portuguese

East Africa, R. Zambesi, Caia, 6 August, 1910 (*Dr. H. Swale*); and a ♂ from an unknown locality.

In distinguishing the present from the following species, reliance should be placed chiefly on the shape of the median brown band on the wings, since the colour of the metapleural tuft and of the fringe on the squamae is subject to variation. In *L. nyasae* the front tibiae are plentifully beset with long spicules, and the claws have a long, yellow, sharp basal tooth. *L. repletus*, Bezzi, is a closely allied form, but is much smaller, has blacker wings and a venation like that of the *L. erythraeus* group, to which it certainly belongs.

183. *Litorrhynchus argyrolepis*, Bezzi (1912).

Closely allied to the preceding species, but differing in the middle brown band on the wings being much narrower at the end.

Originally also described from Nyasaland, there is in the British Museum, besides material from that country, a ♀ from Rhodesia, Bulawayo, 1909 (*E. C. Chubb*). In two recently acquired specimens from Nyasaland, Blantyre, May, 1914 (*Dr. J. B. Davey*), the ♂ has a black metapleural tuft, and a reddish (instead of silvery) fringe on the squamae.

The upper internal angle of the second submarginal cell, which is infuscated in *L. nyasae*, is wholly hyaline in the present species. The front tibiae and claws are as in *L. nyasae*.

Group 4. *L. erythraeus*.

184. *Litorrhynchus metapleuralis*, sp. nov.

Closely allied to *L. allothyris*, but distinguished by the bristles of the metapleural tuft being mainly reddish. In my paper published in 1912, this species was wrongly identified as *L. tollini*, Lw.

Type ♂, from Nyasaland, Mainunbe, June, 1912 (*J. G. Morgan*). In addition there are a ♂ and ♀ likewise from Nyasaland, Central Angoniland (*J. G. Morgan*), and a ♀ from Kenya Colony, Voi, 8-10 February, 1912 (*Dr. S. A. Neave*). The spines on the ovipositor are reddish-brown.

The species is also allied to *L. pseudocollaris*, but is distinguished by somewhat smaller size, by the differently shaped second posterior cell, and by the first abdominal segment being clothed with white hair and white scales.

With *L. metapleuralis* there begins a group of closely allied species, which are very difficult to separate. The group appears not to occur at all in the southern portion of the Ethiopian Region. It is possible that all the forms here distinguished are merely varieties of one species, viz. *L. erythraeus*, Bezzi, which has nothing to do with *L. senegalensis*, Macq.—a true *Exoprosopa* with smooth front tibiae. But in view of the fact that our common species of *Bombylius*, such as *B. major*, *B. undatus*, *B. fimbriatus*, etc. are distinguished by faint differences in the

wing-pattern, I cannot see my way to unite all these forms of *Litorrhynchus*. Nevertheless, complete series of well-preserved specimens of both sexes, and a knowledge of bionomics will be necessary preliminaries to a final decision.

♂. Length of body 12–14 mm.; length of wing 15–18 mm.; length of proboscis 5 mm.

Scales near occipital border of eyes more yellowish than white; frons and face with black hair and yellowish scales; ground-colour of head black on occiput, reddish on fore part of frons and on face, but clothed with chestnut-coloured dust; face gently rounded; proboscis and palpi entirely black. Antennae black; first two joints dark reddish, with black hairs; third joint conical, a little longer than first two joints together, black style only half as long as third joint. Thorax black, reddish on postalar calli; collar pale yellowish; hair on humeri and on notopleural line black; above base of wings a stripe of short yellowish hair; bristles black; pleurae black, dark grey dusted, reddish on lower half, with black hair, but propleural and metapleural tuft reddish, latter with some black bristles above. Scutellum red, broadly black at base, with black bristles on hind border. Squamae pale brownish, with yellow fringe; plumula white; halteres black, with yellowish stalks. Abdomen black, with a broad red spot on each side of second and third segments; abdomen denuded on back in case of type; hair on sides white on first segment, rather long and black on remainder; usual white scales apparently present on third, sixth and seventh segments; genitalia black and black-haired; venter entirely reddish-yellow, clothed with long, sparse black hair. Legs reddish, with black tarsi, except at base; hair and bristles black; front tibiae beset with long spicules, and not shorter than femora, tarsi pilose, but not abbreviated nor thickened; spines on femora long and black, middle pair with three, hind pair with a complete row of seven or eight spines; hind tarsi long and thin; claws black, with sharp black basal tooth. Pattern of wings as in *L. allothyris*, but anal and axillary cells less hyaline at tips; middle band at end only half as broad as third posterior cell; middle cross-vein in a pellucid spot; praediscoidal spot small. Wings black to base, alula black and with blackish fringe; basal hook black; basal comb black, with yellowish scales; veins black, except first, which is dark reddish; second longitudinal vein originating opposite middle cross-vein, and with a deep dip at end; first posterior cell broadly open; middle cross-vein situate on basal fourth of long and narrow discoidal cell; second posterior cell distinctly narrower than third at end, its basal vein shorter than that of third; anal cell greatly narrowed at end.

185. *Litorrhynchus dilatatus*, Bezzi (1912).

Distinguished by the extensive black wing-pattern, filling the anal cell to the end and the base of the third posterior cell; thus

the hyaline spot in the discoidal cell is almost cut off from the hyaline indentation on the hind border.

Described from a ♀ from Nyasaland. In addition to the type, the British Museum possesses a ♀ from Abyssinia, Ardaga, 4 September, 1908 (*Dr. R. E. Drake-Brockman*); a ♂ from Belgian Congo, Lualaba R., 21 April, 1907 (*Dr. S. A. Neave*), which has the hyaline part of the discoidal cell not narrowed, but is otherwise typical; and in the Imp. Bureau coll. a badly preserved ♂ from N. Nigeria (*Dr. J. W. Scott Macfie*), which probably belongs here.

186. *Litorrhynchus obumbratus*, sp. nov.

Nearly allied to *L. erythraeus*, Bezzi, but differing from it, as well as from all the other members of the group, in having a dark stripe in the clear part of the marginal cell.

Type ♂, type ♀, and numerous other specimens from Belgian Congo, Katanga District, 1915 (*Dr. J. Schwetz*); also a couple from Lualaba R., 2,500–4,000 ft., April–May, 1907 (*Dr. S. A. Neave*).

♂♀. A description is unnecessary, since the details are almost the same as in *L. erythraeus*, with the wing-pattern as in *L. allothyris*, viz. with a broad hyaline spot in the discoidal cell, and with the anal cell and axillary lobe hyaline at the end, albeit a little more narrowly. The difference is simply to be found in the prolongation of the dark part of the marginal cell, in the shape of a dark stripe along the first longitudinal vein; this stripe is rather indefinite below, but reaches the end of the second longitudinal vein in a narrow point. The stripe is regularly present in all the eleven specimens examined, and in both sexes.

187. *Litorrhynchus suspensus*, sp. nov.

Like *L. allothyris*, but with the middle band on the wings not reaching the hind border.

Type ♀ from Abyssinia, November, 1911 (*R. J. Stordy*).

♀. Length of body 12 mm.; length of wing 15 mm.; length of proboscis 5.5 mm.

Head and its appendages and clothing as in *L. metapleuralis*; third antennal joint wanting in case of type. Thorax and scutellum as in species mentioned, but metapleural tuft formed by black bristles, with only a few reddish ones intermingled. Abdomen (denuded in case of type) black, with narrow red hind borders to segments; venter black, with red base and red hind borders to segments. Legs and wings as in *L. metapleuralis*, but praediscoidal spot broader, with above it a broad hyaline spot in first basal cell; middle band ending a little beyond second posterior cell, without reaching hind border.

188. *Litorrhynchus erythraeus*, Bezzi (1906).

Characterised by the narrowly hyaline end of the anal and axillary cells, and by the narrower hyaline spot in the discoidal

cell. Originally described from *Erythraea*: the British Museum possesses a ♂ from Nyasaland, Mt. Mlanje, 2 April, 1913 (*Dr. S. A. Neave*); and a couple of specimens from South Abyssinia (*R. J. Stordy*).

189. *Litorrhynchus productus*, sp. nov.

Differing from *L. erythraeus*, Bezzi, in the marginal cell being only narrowly hyaline at the end.

Type ♂ from South Abyssinia, 27 October, 1911 (*R. J. Stordy*).

♂. Length of body 11 mm.; length of wing 13 mm.; length of proboscis 4 mm.

This form is exactly the same as *L. erythraeus*, differing only in the black area of the marginal cell being produced much beyond the cross-vein dividing the first from the second sub-marginal cell, and thus reaching the middle of the terminal dip in the second longitudinal vein.

190. *Litorrhynchus allothyris*, Speiser (in litt.).

Like *L. erythraeus*, but differing in the anal and axillary cells being more broadly hyaline at the end, and in the hyaline spot in the discoidal cell being broader.

This is the form referred to *L. erythraeus*, Bezzi, by Dr. Speiser in his Kilimandjaro paper: there are in the British Museum some specimens of both sexes from Abyssinia, Ardaga, 4 September, 1908, Loga Hardin, 10 September, 1908, and Muka Jila, 30 September, 1908 (*Dr. R. E. Drake-Brockman*); also a ♂ from Kenya Colony, Kabete, 15 June, 1916 (*T. J. Anderson*); and two ♂♂ from Nyasaland, Blantyre, May, 1914 (*Dr. J. B. Davey*).

Genus 29. **EXOPROSOPA**, Macquart (1840).

This genus is extremely well represented in the Ethiopian fauna, and even after the separation of *Litorrhynchus* and *Hyperalonia*, it still remains too extensive and by no means homogeneous. A division into smaller groups is necessary; but such a division cannot be based upon the wing-pattern, which is the method adopted by Becker and others; it is much better to rely upon venational characters, as was shown long ago by Loew, who founded several main divisions.

It is well known that the species of *Exoprosopa* display many differences in venation, some of which have already been used by Rondani and by Coquillett to form new genera. But it is also true that some of these characters are subject to variation. Thus the first posterior cell may be open, closed, or actually stalked in closely allied species, or even in different specimens of the same species; and very often in one or other wing of a specimen, or more rarely in both wings, there may be seen venational anomalies such as supernumerary cross-veins, extra

cells, or recurrent stumps or veinlets. These facts seem to militate against a subdivision based on venational characters alone.

Attentive examination, however, will show that several characters are very regular and constant: such characters include the supernumerary cross-vein in the first submarginal cell in the *E. algira* and *E. divisa* groups; the five posterior cells in the *E. pygmalion* and *E. pentala* groups; and the presence of an appendix on the angle of the lower end of the discoidal cell in the *E. suffusa*, *E. rivularis* and *E. angulata* groups, etc. These characters have at least the same value and constancy as the cross-vein uniting the two branches of the cubital fork in *Hyperalonia*, and may therefore be employed for the purpose of generic or subgeneric division.

Additional characters of subordinate value, are to be found in the front tibiae, which may be short and thick, or long and thin, beset with spicules or smooth; in the face, which may be rounded or conical; in the proboscis, which may be short and retracted within the mouth opening, or long and projecting; in the tibiae, which may be pennate or simple; in the tooth on the hind claws being sharp or blunt; in the form of the third antennal joint, and in the length of its terminal style, etc.

By applying these principles to a series of about one hundred and fifty Palaearctic and Ethiopian species, which I have before me, I have arrived at the results given in the following table for the distinction of the subgenera of the great genus *Exoprosopa*, *sens. lat.* It should be borne in mind that the following subdivision relates only to Palaearctic and Ethiopian species; and that future discoveries in bionomics and metamorphosis will doubtless provide a more natural and suitable basis of classification, which may very possibly conflict with that adopted here.

- 1 (2). Marginal cell divided into two by a supernumerary cross-vein; wings with eye-like spots.i. *Heteralonia*, Rond.
- 2 (1). Marginal cell simple; wings devoid of eye-like spots.
- 3 (4). First posterior cell divided into two by a supernumerary cross-vein (thus five posterior cells present); discoidal cell devoid of a projecting lower apical angle, but with a sinuous, horizontal terminal vein; front tibiae thick and beset with spicules.vi. *Exoptata*, Coquill.
- 4 (3). First posterior cell simple.
- 5 (12). Discoidal cell on lower margin, before tip, with a very prominent angle, emitting an appendix; terminal vein of discoidal cell more or less sinuous, and running at an angle or perpendicularly to longitudinal axis of wing.
- 6 (9). Five posterior cells present.
- 7 (8). Among posterior cells, third alone closed and provided with a long stalk.ii. *Mesoclis*, subgen. nov.
- 8 (7). Among posterior cells, fourth alone closed and provided with a short stalk.iii. *Metapenta*, subgen. nov.
- 9 (6). Only four posterior cells present as a rule.
- 10 (11). Front tibiae short and thick, beset with well-developed spicules; first posterior cell always open.iv. *Acrodisca*, subgen. nov.
- 11 (10). Front tibiae long and thin, smooth; first posterior cell often closed and stalked.v. *Cladodisca*, subgen. nov.

- 12 (5). Discoidal cell without apical projecting angle below, and if sometimes dilated, dilatation rounded, not angular, and at any rate devoid of appendix.
- 13 (16). Vein between discoidal and second posterior cells long, deeply and regularly S-shaped, and in same line with longitudinal axis of wing, or nearly so; wings never dimidiate; discoidal cell narrow and long, not expanded above or below before distal extremity.
- 14 (15). First posterior cell closed, terminating bluntly, and provided with a long stalk; hind tibiae with very short spicules; wings with the basal half yellow and margined with brown. . . .vii. *Trinaria*, Muls.
- 15 (14). First posterior cell usually open, or, if closed, terminating in a narrow apex and with a short stalk; hind tibiae with long and stout spicules; basal half of wings not yellow nor margined with brown. . . .viii. *Deflippia*, Lioy.
- 16 (13). Vein between discoidal and second posterior cells short, straight or only faintly sinuous (if deeply sinuous, then short, or not regularly S-shaped, or forming an angle with longitudinal axis of wing); wings sometimes dimidiate, and discoidal cell shorter and broader, and sometimes expanded above or below before distal extremity.
- 17 (18). Legs feathered; discoidal cell contracted in middle; upper branch of cubital fork not widely divergent from main stem; marginal cell very narrow at end.ix. *Pterobates*, subgen. nov.
- 18 (17). Legs not feathered.
- 19 (20). Marginal cross-vein straight and not recurrent; second longitudinal vein originating beyond middle cross-vein; first posterior cell typically closed and provided with a short stalk; wings with quite hyaline "window-panes"; abdomen with silvery bands, at least in ♂. . . .x. *Argyrospila*, Rond.
- 20 (19). Marginal cross-vein sinuous and recurrent; second vein originating opposite or before middle cross-vein; first posterior cell typically open, but sometimes closed; wings never fenestrate, or if so "window-panes" not hyaline; abdomen devoid of silvery bands. . . .xi. *Exoprosopa*, Macq.

Subgenus i. *Heteralonia*, Rondani (1864).

I have no actual knowledge of this group, which was erected for *Exoprosopa oculata* (not *occulta*, as Rondani erroneously writes), Macquart (1840), from Senegal. This species, which has never been met with or even seen subsequently, is distinguished, according to the original figure, by its peculiar and unique wing-pattern, even supposing that the cross-vein in the marginal cell is not constant.

Subgenus ii. *Mesoclis*, subgen. nov.

This subgenus is erected here for the readily recognisable *E. pygmalion*, Fabr., and the name proposed is in allusion to the fact that the middle cell of the five posterior cells in the wing is closed. The presence of five posterior cells is at variance with the main family character in the Bombyliidae; but the five posterior cells in *Mesoclis*, *Metapenta* and *Exoptata* are very different from those of the *Therevidae*.

Coquebert in 1801 figured *E. pygmalion* under the name *A. algira*, Fabr., and from this there resulted a certain amount of confusion in the writings of the older authors; Wiedemann, however, in 1828 figured the peculiar character of the true species

correctly, instituting a special "*Vierte Horde*" for it alone. Loew is mistaken in declaring that *A. pygmalion* of Macquart, in the "*Suites à Buffon*" is *A. algira*; Macquart says indeed "*cinq cellules postérieures ; troisième fermée*," quoting Wiedemann, Taf. III, fig. 4; in the *Diptères Exotiques*, however, Macquart gave an imaginary figure after that referred to by Meigen (*Syst. Besch.* II, p. 177), but without mentioning the species; subsequently, in 1840, the same author figured and described the species as new under the name *E. varinervis*.

The main characters of the present subgenus may be summarised as follows:—

Frons in ♂ rather broad, not much narrower than that of ♀; vertex not depressed; ocellar tubercle not prominent, with distinct ocelli; third antennal joint regularly conical, elongate, with style less than half its length; proboscis not projecting, as long as mouth. Thoracic and scutellar macrochaetae black and well developed. Abdomen rather narrow, elongate, with parallel sides, obtuse at tip. Front legs not short; front tibiae smooth, thin and long; front tarsi not shortened, with usual pubescence; claws with a short, but pointed, basal tooth. Wings with thin basal hook, and small basal comb; second longitudinal vein originating opposite middle cross-vein, and with well-developed, double terminal dip; marginal cross-vein long, sinuous, and strongly recurrent; five posterior cells, first narrowed at tip, third in form of a small triangle applied symmetrically to terminal vein of discoidal cell, second and fourth of same breadth at end, fifth long, and rather irregular in shape; discoidal cell much dilated at end, its lower angle being produced into fourth posterior cell and provided with a short stump at apex; anal cell open; alula rounded. Wings either uniformly infuscated, or with posterior half hyaline, but in both cases with cross-veins and bifurcations broadly margined with fuscous.

So far as at present known, this subgenus contains no Ethiopian species, and is limited to the type-species, which is common in North Africa, Algeria and Tunisia; I have also received it from Djerba Island. I am inclined to think that *E. delineata*, Becker (1906), is the ♀ of this species; at any rate in my experience the specimens of *E. pygmalion* with dark wings were invariably ♂♂, while those of *E. delineata* with clear wings have always been ♀♀.

Subgenus iii. *Metapenta*, subgen. nov.

The type of this subgenus is *E. pentala*, Macquart (1840), with which *E. reticulata*, Loew (1860), is probably synonymous; the name proposed is in allusion to the five posterior cells. So far as at present known, the group is exclusively Ethiopian; its main characters are as follows:—

Frons rather narrow, in ♂ only a little narrower than in ♀, or of equal breadth in both sexes; vertex not depressed; ocellar

tubercle prominent, with distinct ocelli; face conically produced; third antennal joint elongate conical, with style less than half its length; proboscis short, not projecting. Thoracic and scutellar bristles black, well developed; sternopleura hairy. Abdomen flattened, obtuse, broad or even very broad. Front legs not or very little shortened; front tibiae long, usually thin, but sometimes rather thick, always smooth; front tarsi not or but little shortened, with usual soft pubescence; claws with pointed basal tooth. Wings long, but sometimes broad; basal hook sharp, black; basal comb varying from small to broad; alula proportionally small, short, and rounded. Second longitudinal vein originating opposite middle cross-vein, with deep, double terminal dip; marginal cross-vein very sinuous and strongly recurrent, second submarginal cell therefore of a very peculiar, semilunar shape; upper branch of cubital fork widely divergent at base. Five posterior cells; first more or less narrowed at end; second narrower than third at end, vein between them being bent forwards; fourth elongate, rectangular and closed, with a more or less short stalk; fifth long. Discoidal cell much dilated outwardly, its lower apical angle very prominent, emitting vein bisecting third posterior cell; terminal vein of discoidal cell strongly S-shaped, but about perpendicular to longitudinal axis of wing. Anal cell more or less broadly open. Wings wholly infuscated or even blackened, with apex and hind border often more hyaline, and with veins broadly margined with fuscous; some cross-veins and bifurcations with rounded and much darker spots. The species before me may be determined as follows:—

- 1 (6). Pleurae entirely or mainly black-haired; metapleural tuft with black bristles; legs wholly black or very dark brown; scutellum and abdomen wholly or for most part black.
- 2 (3). Wings almost entirely black, with a few clearer streaks, therefore with no evident reticulation nor darker clouds; stalk of fourth posterior cell short; abdomen mainly black-scaled; legs dark brownish, with black scales. *corvina*, Loew.
- 3 (2). Wings with apex and posterior half clear, therefore distinctly reticulate and clouded; stalk of fourth posterior cell long; abdomen with yellowish or whitish scales; legs black.
- 4 (5). Abdomen with distinct bisinuate bands of yellowish scales, even on last two segments. *reticulata*, Loew.
- 5 (4). Abdomen not so marked, and with last two segments entirely clothed with whitish scales. *dubia*, Ric.
- 6 (1). Pleurae entirely clothed with pale yellowish hair; metapleural tuft yellowish; legs pale reddish or yellowish; scutellum mainly red.
- 7 (10). Wings distinctly reticulate on clear apex and clear posterior half; medium-sized species, with rather elongate abdomen, and rather narrow wings.
- 8 (9). Abdomen black, with narrow red spots on sides; wings with numerous distinct black clouds. *pentala*, Macq.
- 9 (8). Abdomen red, with narrow, black longitudinal stripe; wings with no distinct black clouds. *clathrata*, sp. nov.
- 10 (7). Wings less distinctly reticulate, dark borders of veins being more confluent; species of larger size, with broadly ovate abdomen and broader wings. *cadicerina*, sp. nov.

191. *Exoprosopa* (*Metapenta*) *corvina*, Loew (1860).

A black and black-haired species, somewhat resembling *E. megerlei*, Mg., with black wings exhibiting only a certain number of clearer streaks, which are situated in the discoidal cell, and in the cells along the hind border.

There are in the British Museum three specimens from Nyasaland, Mt. Mlanje, 18–26 November, 1912 (*Dr. S. A. Neave*); a ♀ from Chirinda, 3,800 ft., December, 1910, and another from the same locality, February, 1909. The individuals answer very well to the description of this South African species, which was based upon a ♀ from Caffraria. The as yet undescribed ♂ resembles the ♀ in general appearance and in the coloration of the wings; the frons is of the same breadth as in the ♀; the genitalia are dark reddish-brown, with short yellowish hair in front, and longer black hair behind and at the tip. In the present species the middle femora have three long and several shorter spines above, and the hind femora a complete row of spines beneath; the proboscis is very short—much shorter than the mouth opening; the ground-colour of the legs is dark reddish, at least in the case of the tibiae.

192. *Exoprosopa* (*Metapenta*) *dubia*, Ricardo (1901).

Closely allied to *E. reticulata*, Loew, from which indeed it can only be distinguished by means of its differently scaled abdomen. In addition to the type of *E. dubia*, and a series of other examples which, like the type itself, were taken at Pretoria, the British Museum possesses a single, badly preserved ♀ from S.-E. Rhodesia, Gazaland, Mt. Chirinda, 3,800 ft., 12 December, 1911 (*C. F. M. Swynnerton*), caught in the clutches of an Asilid. Owing to its faulty condition, I have some hesitation in assigning this individual to the present species. The tip of the scutellum, and the sides of the second and third abdominal segments are narrowly red, though this condition is perhaps due to the complete denudation of the body.

193. *Exoprosopa* (*Metapenta*) *cadicerina*, sp. nov.

A fairly large species, with broad abdomen and wings, thus somewhat resembling a Tabanid of the genus *Cadicera*.*

Type ♂ and type ♀ from Natal, junction of Blaauw Krantz and Tugela Rivers, October, 1896 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*).

♂♀. Length of body 15–16 mm.; length of wing 17–18 mm.; breadth of wing 5 mm.; wing-expanse 38–40 mm.

Occiput black, dark grey dusted, very prominent, with yellowish scales near the eye-borders, and with short pale yellowish fringe round central cavity; postvertical furrow broad and deep;

* The name *Cadicera*, Macq., is preoccupied by *Phara*, Walk. (cf. Austen, *Bull. Ent. Res.*, XI, Pt. 2, p. 140 (September, 1920)).—E. E. A.

eyes dark brown, with facets of uniform size, and an indentation of little depth, but with a long bisecting line; vertex slightly depressed, separated from occiput by a space; ocellar tubercle rather flat, elongate, dark reddish or brownish. Frons narrow in both sexes, in ♂ only a little narrower than in ♀, posterior half black, anterior half red, more broadly so in ♂ than in ♀, with a black median spot, which is clothed with erect black hair and with sparse yellowish scales in front; face entirely red, distinctly conical, but more bluntly so in ♂, clothed with black hair and pale yellowish scales, and in ♀ with a distinct black tuft on upper edge of mouth. Antennae with first joint long, more than twice as long as second, pale reddish, clothed with black hairs; second joint globular, dark brownish, black-haired; third joint black, as long as, or a little shorter than first two joints together, and regularly conical in shape; style half as long as third joint, rather stout. Proboscis black, as long as mouth opening; palpi dark yellowish, pale-haired; jowls narrow, pale yellowish, like mouth borders. Thorax black, with black shoulders, but with postalar calli broadly red; thorax clothed with black hair and dark yellowish scales, and with a distinct stripe of yellowish hair on each side; collar formed by yellowish hair; notopleural tufts black; macrochaetae black; pleurae black, with reddish sutures, clothed with yellowish hair, but with some black hairs on mesopleura and pteropleura; metapleural tuft reddish-yellow, with a few black bristles intermingled. Scutellum red, with black base and black macrochaetae. Squamae brownish-yellow, with dark fringe; plumula yellowish; halteres yellow, with paler knobs. Abdomen flattened, ovate, very broad, even a little broader than thorax; in ♂ red, with a broad black longitudinal median stripe, formed by triangular spots in contact with each other, and with their bases on those of segments; abdomen in ♀ black, with a broad lateral red spot on sides of second, third and fourth segments; first segment in both sexes black with red hind border, and clothed on sides with dense yellowish hair; hair on sides and at tip black, but in ♂ there are some yellowish hairs on fore borders of second, third and fourth segments (back denuded in case of types). Venter entirely red in ♂, but with a black median spot at tip in ♀ clothed at base with long, pale yellowish hair, and at tip with short black hairs; ♂ genitalia red, clothed with yellow hair; spines on ovipositor strong, curved, shining reddish. Legs, including coxae, entirely pale reddish, only tarsi infuscated; front coxae with yellow hair; front legs somewhat shortened, with tibiae rather thick and smooth, and tarsi clothed with usual soft pubescence; middle femora with three or four spines, hind femora with a complete row beneath; claws black, narrowly red at base, with short but pointed tooth. Wings long and broad, with black, sharp, curved basal hook, and with broad, black, basal comb, which is clothed with reddish tomentum at base. Wings completely infuscated, but second outer sub-

marginal cell, all posterior cells except first, and discoidal cell have clearer centres (more distinct in ♀ than in ♂); broad fuscous borders of veins rather indefinite, therefore no distinct reticulation; distinct blackish clouds on base of second vein, on middle cross-vein, and in base of fourth and fifth posterior cells. Venation typical; middle cross-vein situate a little before middle of discoidal cell; stalk of fourth posterior cell much shorter than its terminal cross-vein; anal cell as broad at end as first posterior cell; second posterior cell only a little broader than half of third; third posterior cell as broad as fifth. Praediscoidal spot grey, opaque, triangular; alula infuscated, with dark fringe, like base of axillary lobe; clear spots in submarginal cells forming a hyaline patch at apex of wing, divided by dark border of upper branch of cubital fork.

Subgenus iv. **Aerodisca**, subgen. nov.

This subgenus, which is abundantly represented in South Africa, also seems to be exclusively Ethiopian. I have selected as the type *E. angulata*, Loew, and the name proposed is in allusion to the very peculiar form of the discoidal cell. It is highly important to note that all the species agree in having the front legs much shorter than usual, and in the front tibiae being beset with spicules; this perhaps indicates a natural affinity with another Ethiopian group, namely *Litorrhynchus*. The characters of the present subgenus are as follows:—

Frons of much the same breadth in both sexes; vertex not depressed; ocellar tubercle flat, with distinct ocelli; face conical; third antennal joint of regularly conical shape, with style either very short and stout, or more slender and half as long as joint itself. Proboscis usually somewhat projecting, but in one case about twice as long as head. Thorax and scutellum with well-developed, long black macrochaetae; sternopleura clothed with scales. Abdomen elongate or slightly broadened, flat, obtuse at tip. Legs with front pair very short, with thick, short tibiae beset with rather numerous, well-developed spicules; front tarsi very short, pubescent, and sometimes clothed with rigid, bristly hairs. Claws with long, sharp tooth. Wings narrow and long, or rather broad; basal hook long, curved, sharp and black; basal comb of medium size; alula rather narrow, but rounded. Second longitudinal vein generally originating before middle cross-vein, with a well-developed, double terminal dip. Marginal cross-vein sinuous and strongly recurrent. Only four posterior cells present, all open, second and third not differing greatly in breadth at end, but latter always broader than former, vein between them not or but little curved; third posterior cell very long at base, as long as, or a little shorter than fourth. Discoidal cell very broad at end, its lower angle projecting considerably into third posterior cell, and provided with a short stump; its terminal vein sometimes long, very sinuous and horizontal,

sometimes short, less sinuous and nearly perpendicular. Anal cell broadly open. Wings either entirely infuscated, with faint clear centres in external cells; or with apical and hind parts more or less hyaline, with dark spots or reticulation. The present subgenus falls into two sharply divided groups, the first of which, or the *E. angulata* group, contains the South African species; while the second, or *E. katonae* group, includes the species from Central and East Africa. The species known to me may be distinguished as follows:—

- 1 (14). Terminal vein of discoidal cell, between latter and second posterior cell, long, deeply S-shaped and in same direction as longitudinal axis of wing, discoidal cell therefore long and very acute at end; third antennal joint very elongate, linear, with a very short or even rudimentary terminal style (*E. angulata* group).
- 2 (5). Wings uniformly infuscated, without broad clear apex or broad clear hind border.
- 3 (4). Metapleural tuft consisting entirely or mainly of black bristles; antennal style rudimentary; smaller species. *fimbriatella*, Bezzi.
- 4 (3). Metapleural tuft consisting entirely of yellowish bristles; antennal style short and stout, but quite distinct; larger species. *offuscata*, Bezzi.
- 5 (2). Wings with dark base and anterior border, and broad clear apex and hind border, usually spotted or reticulate.
- 6 (7). Proboscis about twice as long as head; wings broadly infuscated, with hyaline, unspotted apex. *haustellata*, sp. nov.
- 7 (6). Proboscis shorter, as long as or a little longer than head; wings with spotted or reticulate apex and hind border.
- 8 (13). Veins along hind border of wing with broad fuscous edging, or with dark spots before end.
- 9 (10). Veins on hind border broadly margined with fuscous, hyaline part of wings thus appearing reticulate; anal cell wholly infuscated. *personata*, Bezzi.
- 10 (9). Veins on hind border with only isolated, rounded or elongate dark spots; anal cell hyaline apically, with a rounded dark spot before end.
- 11 (12). A rounded dark spot just before end of first posterior cell. *polyspila*, sp. nov.
- 12 (11). No dark spot before end of first posterior cell. *angulata*, Loew.
- 13 (8). Veins along hind border of wing devoid of dark spots or borders; anal cell without dark spot before end; terminal vein of discoidal cell less horizontal. *spoliata*, sp. nov.
- 14 (1). Terminal vein of discoidal cell not or but little S-shaped, and more perpendicular; discoidal cell thus shorter, and less acute at end; third antennal joint shorter and conical, with style half or more than half its length (*E. katonae* group).
- 15 (18). Metapleural tuft consisting entirely or mainly of yellowish bristles.
- a (b). Head, pleurae and abdomen for most part red; pleurae without black hairs; abdomen elongate, not broadened behind. *rubella*, sp. nov.
- b (a). Head, pleurae and abdomen entirely or mainly black; notopleural and mesopleural tufts with some black hairs; abdomen broad and dilated behind.
- 16 (17). Front tarsi with usual short, soft pubescence alone; wings wholly infuscated, but cells with slightly clearer centres, dark clouds on cross-veins and bifurcations therefore less conspicuous. (♂) *katonae*, Bezzi.
- 17 (16). Front tarsi beset with numerous rigid hairs above; wings hyaline, with dark base and dark fore border, and with very conspicuously clouded cross-veins and bifurcations. (♀) *pilimana*, Bezzi.

- 18 (15). Metapleural tuft consisting entirely or mainly of black bristles; wings wholly infuscated.
- 19 (20). Scutellum entirely black; wings with violaceous reflexions, and very distinct brown clouds on cross-veins; front tarsi with rigid hairs. *violacea*, sp. nov.
- 20 (19). Scutellum red, with black base; wings devoid of violaceous reflexions, and with less distinct brown clouds; front tarsi with usual short, soft pubescence. *suffusipennis*, Bezzi.

Group 1. *E. angulata*.

In addition to the species differentiated above, *E. recurrens*, Loew (1860), a South African species unknown to me, also belongs to this group.

194. *Exoprosopa* (*Aerodisca*) *fimbriatella*, Bezzi.

A species of smaller size, with wholly infuscated wings, differing from any other owing to its rudimentary antennal style, and the complete fringe of erect yellow hair on the first abdominal segment.

Described by me in my memoir on the Bombyliidae in the South African Museum: the British Museum possesses a somewhat larger ♀, measuring 10 mm. in length, from the Transvaal, Driefontein, 2 December, 1903 (*C. H. Pead*). In the matter of wing-pattern, the present species seems to be allied to *E. umbrosa*, Loew, from which, however, it is distinguished by its very different antennae; besides, judging from Loew's figure, *E. umbrosa* belongs to the second group.

195. *Exoprosopa* (*Aerodisca*) *haustellata*, sp. nov.

A small species, very distinct owing to the (for the present subgenus) abnormal length of the proboscis, and the characteristic wing-pattern.

Type ♀ from N. Rhodesia, Chiwera, 15 September, 1911 (*F. V. Bruce-Miller*).

♀. Length of body 11 mm.; length of wing 12 mm.; length of proboscis 3.5 mm.

Occiput black, dark grey dusted, with pale yellowish scales on eye-borders, and with pale yellowish fringe; postvertical furrow very narrow; eyes brown, with distinct indentation and bisecting line; ocellar tubercle black, very slightly prominent. Frons rather narrow, black near vertex, red elsewhere, clothed with erect black hair, and pale yellowish scales; face conically prominent, but obtuse and emarginate at end, clothed like frons; mouth borders yellowish. Antennae with first two joints red, first twice as long as second, with black hairs (third joint wanting in case of type). Proboscis shining black, very long; palpi blackish, dark-haired. Thorax black, with narrowly red sides and postalar calli; thorax clothed with erect black hair and yellow scales, with a stripe of yellowish hair on each side;

macrochaetae well developed and black; pleurae black, broadly red below and along sutures, clothed entirely with yellowish hairs, even on metapleura. Scutellum red, with black base, clothed like thorax, and with black bristles. Squamae yellowish, with whitish fringe; halteres yellowish-brown, with whitish knobs. Abdomen black, but hind borders of all segments, except first, and sides of second, third and fourth red; first segment on sides with dense, pale yellowish hair, remainder with short black hair, and with yellowish and black scales; tergites denuded in case of type, but second segment seems to have a basal band of white scales, and last two segments appear to be clothed with pale yellowish scales. Venter reddish, with yellowish scales and hair; genital segment of ♀ shining black above; spines on ovipositor shining reddish. Legs yellow, with front tarsi black and remainder blackened at end; front coxae with black hair; femora with yellowish scales; front tibiae with thin, sparse spicules, which are less developed than in the allied species; front tarsi with short, soft pubescence; spines black, middle femora above with two, hind femora below with a complete row; claws black, thin, with sharp, thin tooth. Wings wholly infuscated from base to end of marginal cell, base of cubital fork and end of first posterior cell; wings a little clearer along hind border, and at apex hyaline and devoid of spots. Dark spots at base of second longitudinal vein, on middle cross-vein and at base of last two posterior cells less developed; marginal cell with a fainter subhyaline spot before end. Venation typical for subgenus and for group; middle cross-vein distinctly before middle of discoidal cell; anal cell at end narrower than first posterior cell; second posterior cell a little narrower than third, vein between them being curved forwards; third and fourth posterior cells of about equal breadth. Alula wholly infuscated, with dark brown fringe, like base of axillary lobe. Basal hook black; basal comb small, with black bristles and pale yellowish scales. Marginal cross-vein with a stump projecting into first submarginal cell before end; another stump projecting into discoidal cell is before lower end of terminal vein of discoidal cell; both stumps regularly present in both wings.

196. *Exoprosopa* (*Acrodisca*) *personata*, Bezzi.

Allied to *E. angulata*, Lw., but differing in the wings being more broadly infuscated; the wings are reticulate, but not spotted on the hind border.

Described by me from Bushmanland in my account of the Bombyliidae in the South African Museum; there are in the British Museum a ♂ from Nyasaland, Blantyre District, Namiwawa Stream, 27 August, 1910 (*Dr. J. E. S. Old*); and a second specimen from S. Rhodesia, Bulawayo, 15 September, 1910, "caught on ground" (*E. C. Chubb*).

197. *Exoprosopa* (*Aerodisca*) *polyspila*, sp. nov.

Differing from the other members of the present subgenus owing to the numerous dark spots on the wings, the first posterior cell having a spot just before its end.

Type ♀, a very old and damaged specimen from S. Africa, 1844 (*Dr. A. Smith*); the species is described here on account of its characteristic wing-pattern.

♀. Length of body 10 mm.; length of wing 11 mm.

The head cannot be described in detail, being too damaged by moisture; face conical and very prominent; proboscis not projecting. Thorax black, with reddish postalar calli, and clothed with yellowish scales, with a stripe of whitish hair on each side and well-developed black macrochaetae; pleurae black and grey dusted above; reddish below, clothed entirely with yellowish hair, even on metapleura, and with a patch of silvery scales on sternopleura; scutellum reddish, with black base and

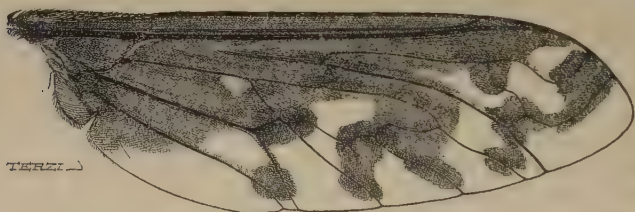


FIG 21.—*Exoprosopa polyspila*, sp. nov. Wing of ♀. $\times 8$.

black bristles; halteres yellowish-brown, with whitish knobs. Abdomen black, with red sides in case of first two segments, and red hind borders to remainder. Legs yellowish, of usual shape for subgenus, and with black spines. Wings with black basal hook and narrow basal comb, which has black bristles and whitish scales; wings infuscated at base and on anterior half, hyaline elsewhere, limit between infuscated and hyaline parts extending from near middle cross-vein, over base of discoidal cell, to middle of anal cell and axillary lobe. Marginal cell with a broad hyaline spot before end; tips of second longitudinal vein and of upper branch of cubital fork with two broad fuscous spots, which are united so as to form a single blotch; upper end of marginal cross-vein and base of upper branch of cubital fork in each case with a rounded fuscous spot; a series of four ovate fuscous spots of equal size along hind border, before ends of fourth vein, of vein between second and third posterior cells, of fifth vein and of anal cell; vein at end of discoidal cell has a very broad fuscous border, which includes projecting angle and is in contact with spot before end of fifth vein; a broad fuscous spot, united with fuscous area at base of wing, in base of each of last two posterior cells. Alula darkened, with pale fringe.

Venation normal for group; middle cross-vein before middle of discoidal cell; first posterior cell twice as broad as anal cell at end; remaining posterior cells of about equal breadth; discoidal cell infuscated at base and tip, with a large median hyaline spot, united with hyaline hind border.

198. *Exoprosopa (Acrodisca) angulata*, Loew (1860).

A ♀ from S. Rhodesia, Bulawayo, 10 November, 1910 (*E. C. Chubb*), belongs to a variety distinguished by the dark spots on the veins of the hind border of the wing not being developed.

199. *Exoprosopa (Acrodisca) spoliata*, sp. nov.

Allied to *E. angulata*, Loew, but differing from it and from the other members of the group in the anal cell and the veins of the hind border being destitute of dark spots before the end.

Type ♀ and two additional specimens of the same sex from Natal, Estcourt, September–October, 1896 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*); five other ♀♀ from the Transvaal, Piet Retief, September–October, 1903 (*Capt. R. Crawshaw*). In the shape of its discoidal cell *E. spoliata* approaches the species of the following group, with which it forms a connecting link; it is possible that in the ♂, which is as yet unknown, the wings are more infuscated.

♀. Length of body 11–12 mm.; length of wing 12–13 mm.; wing-expanse 27–30 mm.

Occiput black, with yellowish scales, which are whitish near eyes, and with pale yellowish fringe; postvertical furrow short and deep; ocellar tubercle black, but little prominent. Frons rather narrow, black, but reddish near antennae, clothed with erect black hair and pale yellowish scales; face reddish, conically prominent, with a more or less broad black median spot, clothed like frons, but with some pale hair below, and with a short black tuft on upper mouth edge; mouth borders yellowish. Antennae with first joint reddish and black-haired, twice as long as second, which is black and globular; third joint black, very elongate conical, with a very short, stout style. Proboscis black, slightly projecting; palpi blackish, dark-haired. Thorax black, postalar calli dark reddish; thorax clothed with black hair and pale yellowish scales, and with a stripe of paler hair on each side; macrochaetae well developed, black; collar yellowish; pleurae grey dusted, reddish near sutures, with yellowish hair even on metapleura, but with scattered black hairs on middle of mesopleura, and a patch of silvery scales on sternopleura. Scutellum reddish, with black base, clothed like thorax, and with black bristles. Squamae brownish or reddish, with white fringe; halteres brown, with whitish knobs. Abdomen broad and short, distinctly broader than thorax, black, with broad reddish hind borders to segments, whitish hair on sides of first and on anterior half of second segment, and short sparse, black hair elsewhere;

tergites with black, yellow and white scales, black scales near base, yellow ones on sides and behind, and white ones forming complete narrow transverse basal bands on second, fourth and sixth segments, white bands on fourth and sixth segments being biarcuate; a similar but broader band on seventh segment; third segment with only a short vestige of a white band on each side. Venter black, with reddish hind borders to segments, and whitish hair and scales; spines on ovipositor shining yellow. Legs entirely yellowish, with tarsi blackened at end; front coxae with whitish hair; front legs much shortened, with tibiae thick and beset with numerous, well-developed spicules, and with tarsi short and clothed with usual pubescence; all spines black, on the middle femora three or four, on hind femora a complete row beneath; claws with a long, pointed, tooth. Wings rather broad and short, not narrowed at base, alula being a little longer than usual; hook and comb well developed and large, both black, latter with yellowish scales. Veins reddish, infuscated

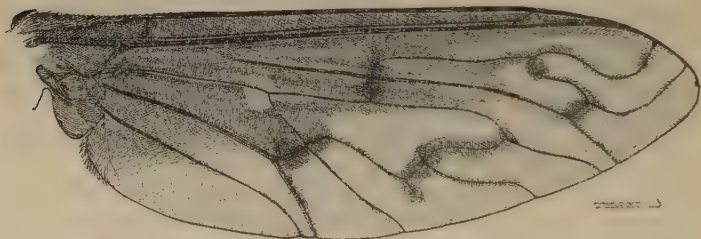


FIG. 22.—*Exoprosopa spoliata*, sp. nov. Wing of ♀. $\times 6\frac{1}{2}$.

distally; their direction typical for the group, but terminal vein of discoidal cell shorter, less curved and less horizontal than in the other species, thus in shape and position approaching its condition in following group; middle cross-vein before middle of discoidal cell; first posterior cell as broad as anal cell at end; second posterior cell a little broader than half of third, vein between them being much bent forwards; near point of junction of vein between second and third posterior cells with discoidal cell there is almost always a short stump projecting into discoidal cell; third posterior cell as long as fourth or a little shorter. Wings infuscated at base and on fore border as far as level of fork of cubital vein, with dark rounded spots at end of second vein, on upper end of marginal cross-vein, on base of upper branch of cubital fork, on base of second vein, on middle cross-vein and on bases of second and third posterior cells; there is also a broad fuscous border on terminal vein of discoidal cell, continued on to stump arising from angular projection; no trace of the dark spots seen in wings of other species near hind border, or at end of anal cell. Alula infuscated in same way

as wing-base, but with a faint yellowish tinge, its fringe dark brown, like that of axillary lobe.

Group 2. *E. katonae*.

Judging from the figure, *E. umbrosa*, Loew (1860), will have to be referred to this group, which in that case must take its name.

200. *Exoprosopa* (*Acrodisca*) *rubella*, sp. nov.

Near *E. katonae* and *E. pilimana* from East Africa, but differing from both on account of its more elongate body, the predominant colour of which is reddish.

Type ♂ and type ♀ from Kenya Colony, Mbuyuni, Serengetti Plains, 25-26 May, 1916 (*T. J. Anderson*).

♂♀. Length of body 12-13 mm.; length of wing 13-14 mm.

Head reddish, with area near vertex and around ocelli blackened; central fringe yellowish; frons in ♀ one and a half times as broad as that of ♂; face and frons clothed with erect black hair and yellowish scales; antennae with first and second joints red, third joint black, regularly conical, with style half as long as joint itself; proboscis projecting. Thorax black, grey dusted on back, reddish on sides and on pleurae, clothed with yellowish hair, that on pleurae being paler, and without any intermixture of black hair; bristles black; metapleural tuft pale yellowish. Scutellum entirely red, with black bristles on hind border. Squamae dirty yellowish, with whitish fringe; halteres blackish. Abdomen red, with a black transverse blotch or band, not reaching lateral extremities, at base of each tergite; abdomen denuded in case of types, but apparently clothed with black and yellowish scales; hair yellowish on sides of first segment, black elsewhere. Legs reddish, with tarsi blackened at end; front tarsi in ♀ with rigid erect hairs, less numerous and shorter than in *E. pilimana*; spines and spicules black, hind femora below with five or six bristles, spicules on hind tibiae long; claws red, black at end, with blunt basal tooth. Wings infuscated, more intensely on anterior half, posterior half in ♀ not much paler than in ♂; dark spots on cross-veins and bifurcations rounded and rather large. Venation as in the other species of this group.

201. *Exoprosopa* (*Acrodisca*) *violacea*, sp. nov.

A wholly black and mainly black-haired species of smaller size, with entirely and uniformly infuscated wings, which exhibit violaceous reflexions and darker clouds on cross-veins and bifurcations.

Type ♂ and type ♀ from Nyasaland: ♂ from Mt. Mlanje, April, 1913 (*Dr. S. A. Neave*); ♀ (without a head) from Central Angoniland, lat. 13° 42' S., long. 34° 20' E. (*J. G. Morgan*).

♂♀. Length of body 10-15 mm.; length of wing 11-17 mm.

Head entirely black; occipital fringe yellowish; eye-borders with black scales. Frons and face with erect black hair and scattered black scales, which are whitish-shining; face rather prominent, with a dense fringe of rigid black hairs on mouth border, forming a tuft in front at upper edge. Antennae entirely black, with first and second joints black-haired; third joint regularly conical, about as long as rather elongate first joint. Proboscis somewhat projecting; palpi black. Thorax wholly black, clothed with black hair and yellow scales, and with a stripe of yellowish hair on each side; collar yellow above, black on sides and below; macrochaetae well developed and black; pleurae, including metapleura, entirely black-haired. Scutellum entirely black, with yellowish scales and black bristles. Squamae blackish-brown, with brownish fringe; plumula white; halteres black, with paler knobs. Abdomen entirely black and with mainly black scales on back, but apparently on base of second, and on sides of third and fourth segments there are bands of white scales; sides entirely clothed with black hair and black scales, only first segment having pale yellowish hair above; spines on ovipositor long, dark reddish; venter entirely black, black-scaled and black-haired. Legs entirely black, with black hair, black scales and black spines; front legs short, with short, stout tibiae beset with well-developed spicules, and with short tarsi, beset with numerous rigid hairs above; middle femora with two or three spines, hind femora with a complete row; claws black, with short but pointed tooth. Wings broad and long, narrowed at base; alula very narrow, almost rudimentary; basal hook and basal comb black, latter very small; venation typical for the group; second longitudinal vein originating before middle cross-vein; upper branch of cubital fork widely divergent at base; middle cross-vein before middle of discoidal cell; terminal cross-vein of discoidal cell short, moderately curved and almost perpendicular, discoidal cell thus short and not very acute at end; on junction of vein between second and third posterior cell with discoidal cell is a stump projecting into latter cell; second posterior cell not much narrower than third, vein between them being almost straight; first posterior cell narrowed at end, being only a little broader than anal cell at tip; third posterior cell a little shorter than fourth. Wings wholly infuscated, devoid of clearer spots, but with violaceous reflexions, and with six rounded dark clouds situate as follows: one on upper end of marginal cross-vein; one on base of upper branch of cubital fork; one on base of second longitudinal vein; one on middle cross-vein; one on base of third and one on base of fourth posterior cell; in addition, a broad dark border to terminal vein of discoidal cell, continued on to anterior side of projecting triangle. Alula blackish, with blackish fringe; latter scarcely distinguishable on base of axillary lobe. Praediscoidal spot whitish, opaque and small.

This species is very well differentiated, and is reminiscent of *Deflippia lepidogastra*, Bezzi; the scales on the entire body are black, but show slight reflexions at certain angles; the really white scales are few in number, and are to be found on the sides of the third, fourth, sixth and seventh segments; the ♂ genitalia are black; on the sides of the abdomen, among the black hair, there are long black scales. Front tarsi of the ♂ with sparse soft hair. Spicules on the hind tibiae very numerous, long and strong.

Subgenus v. **Cladodisca**, subgen. nov.

This subgenus, of which *E. suffusa*, Klug (1832) is to be regarded as the type, shows the same venational characters as the preceding one (hence the name), but differs in the front legs not being abbreviated, but having long, thin tibiae, which are quite smooth. It seems also to differ in its geographical distribution. While the species of *Acrodisca* are exclusively Ethiopian and mainly South African, those of *Cladodisca* are chiefly Mediterranean or Caspian, and only a few of them have been found in Southern Arabia, Sokotra, Abyssinia and (?) Somaliland. The main characters of the subgenus are as follows:—

Frons rather narrow, or tolerably broad, its breadth not showing much difference in the two sexes; vertex depressed; ocellar tubercle but little prominent, with distinct ocelli; face conical and very prominent, or only bluntly convex; in former case proboscis projecting only a little at end, in latter proboscis longer and projecting for a distance equal to length of antennae. Third antennal joint elongate conical, regular in shape, gradually tapering to a point; style short and stout, shorter than half of third joint. Thoracic and scutellar bristles long and stout, entirely or mainly black; sternopleura usually destitute of hair, and bearing a patch of white or silvery scales. Abdomen elongate, usually flat, but sometimes convex and conical. Front legs long and thin, with tibiae entirely smooth, and with tarsi long and clothed with usual pubescence; claws with sharp or blunt tooth. Wings long and narrow, with strong, curved, black or yellow, basal hook, and with rather small basal comb; alula short and narrow, or rather long and rounded. Second vein with terminal dip not very deep; marginal cross-vein more or less recurrent; first posterior cell open or closed, in latter case with short or tolerably long stalk, but always acute outwardly; second and third posterior cells of equal breadth at end, vein between them being almost straight; third posterior cell only a little shorter than fourth; discoidal cell dilated apically, its inferior angle very prominent, with a stump at its apex; terminal vein of discoidal cell short and almost straight, or only slightly curved, and nearly perpendicular; anal cell rather broadly open. Wings either infuscated basally and on margin, with dark spotted cross-veins and bifurcations, or hyaline basally, with a peculiar pattern of fuscous-margined veins in middle.

The present subgenus may be divided into two groups, only the first of which includes Ethiopian species.

Group 1. *E. suffusa*.

Face conical and very prominent; proboscis only slightly projecting. Abdomen not conical, with hair on sides. Claws with pointed tooth. Alula narrow and transverse; first posterior cell closed, and usually stalked. Wings with anterior basal half broadly infuscated, or even entirely infuscated, but with distinctly spotted and dark-bordered cross-veins.

To the present group belong: *E. suffusa*, Klug (1832); *E. insularis*, Ricardo (1903); *E. conturbata*, Loew (1869); *E. punctinervis*, Becker (1913); *E. serpentata*, Loew (1854); and perhaps *E. zona*, Bigot (1860). Of these species, the first has been recorded (but I think erroneously) by Johnson from Somaliland; the second occurs in Sokotra; and the fifth is found in Erythraea: all the others are Mediterranean or Caspian.

Group 2. *E. rivularis*.

Face only bluntly convex; proboscis much more prominent. Abdomen conical, and almost bare on sides. Claws with blunt tooth. Alula long and rounded. First posterior cell broadly open. Wings with hyaline base, and infuscated fore border and centre.

In this group are included only the three Mediterranean species: *E. rivularis*, Meigen (1820); *E. munda*, Loew (1869); and *E. dispar*, Loew (1869). The last-mentioned species, which is considered by Griffini to be only a variety of the first, is distinguished by the form of the discoidal cell, which in the ♀ has the projecting angle but is devoid of a stump, while in the ♂ it is quite simple: in general facies the species is evidently allied to *E. rivularis*, but in venation it shows the characters of the subgenus *Exoprosopa*, s. str., group *E. punctulata*.

Subgenus vi. *Exoptata*, Coquillett (1887).

Owing to the fact that I have no actual knowledge of the typical species *E. divisa*, Coquillett (1887), which occur in California, Arizona and New Mexico, I cannot say whether it is or is not congeneric with the forms here included under the name *Exoptata*. I use the latter here for the reception of *E. algira*, Fabr., and its allies, for which I previously employed in my own collection the name *Zygodiola*, nov. gen.: a designation which will have to be adopted in case the North American species are not congeneric with those of the Old World.

I interpret *E. algira* in the sense of Loew and all recent writers; but it would appear that the older authors often confounded it with *E. pygmalion*. Moreover I have myself seen only Sicilian

specimens (*E. sicula*, Macquart, of which *E. archimedeae*, Bigot, is a synonym) of *E. algira*, as was also the case with Loew. Osten Sacken was the first to call attention to the fact that in *E. algira* the front tibiae are beset with spicules.

I give below the main characters of the subgenus, taking *E. algira* as the type.

Frons rather broad in both sexes, being in ♂ only a little narrower than in ♀; vertex depressed; ocellar tubercle flat; ocelli distinct; face only bluntly convex, not conically prominent; third antennal joint long, regularly conical or almost linear; style short, not longer than half of third joint; proboscis longer than head, projecting for a distance equal to length of antennae. Thoracic and scutellar bristles yellow and well developed; sternopleura hairy. Abdomen broad and flat, blunt at end. Front legs distinctly, but not much, abbreviated; front tibiae thick, with three rows of spicules; front tarsi short with usual pubescence; claws with pointed tooth, latter however is short and blunt in *E. normalis*. Wings broad and not very long; basal hook pale yellow, stout, gently curved, broad at base and blunt at end; basal comb short and broad. Second longitudinal vein originating opposite middle cross-vein, and with a slight dip at end; marginal cross-vein straight, sometimes recurrent, sometimes not; first posterior cell divided by a cross-vein, which is situate before end of discoidal cell, and is parallel to middle cross-vein; distal portion of first posterior cell open at end, though slightly narrowed; discoidal cell simple, very acute outwardly, its terminal vein being S-shaped, and in same line with preceding vein and with longitudinal axis of wing (in ♀ of *E. algira* discoidal cell dilated beneath, but rounded); vein between second and third posterior cells straight, the two cells being of equal breadth at end; third posterior cell obtuse at base, and not very long; anal cell rather broadly open. Alula long, rounded. Wings faintly infuscated basally, with clouded cross-veins and bifurcations.

This subgenus, of which no Ethiopian species are at present known, includes only the Mediterranean *E. algira*, Fabricius (1794), *E. normalis*, Loew (1869), and *E. singularis*, Macquart (1840), the latter of which perhaps occurs in the Ethiopian portion of Arabia; and the Caspian *E. fallaciosa*, Loew (1873).

Subgenus vii. *Trinaria*, Mulsant (1852).

The genus *Trinaria*, as erected by Mulsant, who was a great entomologist but not a Dipterologist, is absolutely identical with *Exoprosopa*, Macquart, *sens. lat.* But since Coquillett has shown that its type is *Anthrax interrupta*, Mulsant, which is synonymous with *A. rutila*, Wiedemann, the name must be adopted for the present subgenus, as type of which I take Wiedemann's species which has just been mentioned, viz. *Anthrax rutila* (1818).

The species of the subgenus *Trinaria* are at once distinguished by their handsome appearance and peculiar coloration, to which an approximation is found only in certain species of *Exoprosopa*, s. str., such as *E. aegina*, Wied., or *E. aeacus*, Meig., which have, however, a very different venation. The characters are as follows:—

Frons rather narrow, of about same breadth in both sexes; occiput very prominent, with long, narrow postvertical furrow, separated from vertex by a deep transverse furrow; vertex not depressed; ocellar tubercle but little prominent, or even entirely flattened, with distinct ocelli; face rounded, projecting but little; proboscis short, slightly or not at all projecting. Antennae with the first two joints short, of nearly equal length; third joint very elongate, gradually tapering to a point, with short, stout style, which is much less than half as long as joint itself. Thorax and scutellum with yellow bristles, well developed but not stout; sternopleura densely hairy, devoid of scales. Abdomen narrow, elongate, convex and conical, clothed with short hair and almost bare on sides. Anterior legs not greatly, though distinctly, abbreviated; front tibiae smooth and rather thick; front tarsi abbreviated and densely pubescent; middle and hind tibiae with rather short spicules, hind tibiae also densely pilose; claws with long, pointed tooth. Wings long, with stout and thick, yellow basal hook, and with broad basal comb; alula well developed, but broad rather than long. Second longitudinal vein without a dip at end; marginal cross-vein curved and recurrent; first posterior cell closed, ending bluntly and provided with a long stalk; second posterior cell narrower than third at end, vein between them being very sinuous and bent forwards; apical cross-vein of discoidal cell strongly S-shaped and horizontal, discoidal cell being thus very acute at end, and shaped much as in *Litorrhynchus*; fourth posterior cell short, but third considerably shorter at base; anal cell narrowly open. Wings with a basomarginal yellow pattern, which is edged with fuscous, so that there is a dark middle band. At present only three species are known to belong to this subgenus; these are differentiated in the following table, but the first is Mediterraneo-Caspian, the second Persian, and the third alone Ethiopian.

- 1 (2). Antennae entirely black; abdomen black, with two pairs of lateral white spots; wings with a narrow fuscous band; smaller species.
rutila, Wied.
- 2 (1). Antennae entirely red, and with reddish hairs at base; abdomen destitute of white spots; fuscous band on wings broader; species of larger size.
- 3 (4). Abdomen mainly reddish; dark band on wings rather narrow and paler; discoidal cell with a median hyaline spot. . . . *tamerlan*, Portsch.
- 4 (3). Abdomen entirely black; dark band on wings broader and blacker, filling whole of discoidal cell except its base, which is yellow.
rutiloides, sp. nov.

202. *Exoprosopa (Trinaria) rutiloides*, sp. nov.

A handsome species of considerable size, differing from any other known Ethiopian species owing to the very peculiar coloration and venation of the wings.

Type ♀ from the Gambia, Tinto, 6 March, 1911 (*Dr. J. J. Simpson*). *E. rutiloides* closely resembles larger specimens of *E. iamerlan*, Portschinsky (1887), which, according to Becker (1913), is subject to great variation in size.

♀. Length of body 21 mm.; length of wing 21 mm.; breadth of wing 6 mm.

Head entirely black, only very slightly developed, small, flat ocellar tubercle being blackish; occiput very prominent, convex, bare, almost destitute of scales, having only a few near eye-borders; postvertical furrow deep but very narrow, united with furrow dividing vertex from occiput so as to form a Y. Eyes brown, with slightly marked indentation and short bisecting line. Frons in ♀ rather narrow, clothed with very short, dense, reddish pubescence, and with a few reddish scales anteriorly; face prominent but not conical, gently rounded, with very sparse scales and short reddish hair, forming a distinct fringe along mouth borders; no black tuft on upper mouth edge; mouth borders yellowish. Proboscis short and thick, shining black, not at all projecting; palpi long, dark brownish, with short dark hairs. Antennae entirely reddish; first joint only a little longer than very short second joint, and clothed entirely with short, reddish hairs; third joint not broadened at base, of a regular, elongate-conical, almost linear shape, not very attenuate at end, with a short stout style, about one-tenth of length of joint itself. Thorax black and grey dusted, dark reddish on sides and behind, with short reddish hair posteriorly, bare on back, but with dense reddish scales; on each side there is a narrow strip of short whitish hair; bristles entirely reddish, well developed, but neither stout nor long. Pleurae black, dark reddish below and on breast, clothed with hair which is bright red in notopleural tuft, black in middle of mesopleura and on lower part of pteropleura, and reddish elsewhere; metapleural tuft consisting of short, dense, reddish bristles, which are black at tips and below; sternopleura with dense, short, black pubescence; collar pale reddish above, bright red on sides, and black beneath. Scutellum greatly developed, transverse and nearly rectangular, entirely red, with reddish scales on disc, reddish hairs on sides, and numerous short red bristles behind. Squamae reddish-brown, with dirty whitish fringe; halteres yellowish, with knobs dark above and whitish below; plumula reddish-yellow. Abdomen long, conical, pointed at end, deep black, devoid of any ornamentation, almost bare on sides, with a few short black hairs near end, and with a black fringe on last segment; first segment is reddish on hind border, with a tuft of dense, reddish-yellow hair on sides;

abdomen clothed on back with black scales; if denuded, sides of second and third segments appear dark reddish; all segments longer than usual, second segment the longest of all; venter entirely deep black, and apparently quite destitute of scales, but with some black hair in middle near base; lower genital segment of ♀ greyish, spines on ovipositor shining reddish. Legs black, with yellowish front tibiae; femora dark red below and at tips, but clothed with deep black scales; hair black; front tibiae smooth; front tarsi short, thick, with short, dense, reddish pubescence; all spines black but much shorter than usual, two or three on middle femora, on hind femora forming a complete row beneath; spicules on hind tibiae not longer than rather dense black pubescence, in which they are almost concealed; spicules on middle tibiae more distinct, pubescence being sparse and very short; claws black, with a long, pointed basal tooth. Wings elongate, with almost parallel margins; basal hook rather stout, yellowish-red, curved at base but afterwards straight;

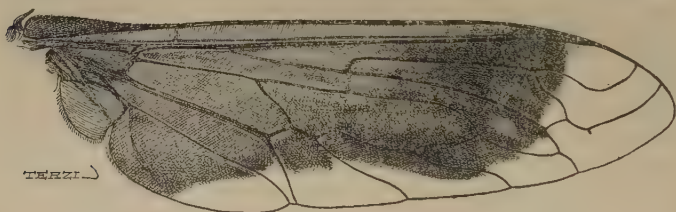


FIG. 23.—*Exoprosopa rutiloides*, sp. nov. Wing of ♀. $\times 4$.

basal comb yellowish, rather broad, with short black bristles. Basal and anterior portions of wings yellow, with red veins; boundary of yellow area running from middle of anal cell and of second basal cell, over base of discoidal cell and middle cross-vein, to costa before end of auxiliary vein. Yellow area edged with a dark band, beginning very pale and indistinct before end of anal cell, filling basal half of fourth posterior cell and, becoming continually blacker and broader, occupying basal half of third and second posterior cells and almost whole of first posterior cell, apex of which is hyaline; apex of first submarginal cell narrowly hyaline, inner base of second submarginal cell infuscated; marginal cell broadly hyaline at end. Apex and entire hind border of wing quite hyaline and iridescent; veins blackish in dark band, dark yellowish in hyaline part; end of anal cell, and that of axillary lobe more broadly, hyaline. Alula yellow, transverse and short, with fringe of very broad, pale yellowish scales, which becomes darker on basal part of axillary lobe. Discoidal cell almost entirely dark, less than its basal fourth being yellow. Dark band in its broadest part as broad as length of discoidal cell; limits between yellow, dark, and hyaline parts very clearly defined. Venation normal for the subgenus; second longi-

tudinal vein originating opposite middle cross-vein; latter situate on first third of discoidal cell; upper branch of cubital fork bent at an angle beyond junction with marginal cross-vein, and there provided with a short stump; stalk of first posterior cell a little longer than basal part of upper branch of cubital fork.

Subgenus viii. **Defilippia**, Lioy (1864).

This subgenus, which includes a large number of species, is not entirely homogeneous; it shows a great many variations in wing-pattern, and even contains species with entirely hyaline wings. These differences, which almost always indicate natural affinities, may be used to distinguish several groups.

The main character of the subgenus is to be found in the form of the discoidal cell, which approaches, or is actually the same as that of *Litorrhynchus*. Transitional forms, however, occur, and certain species of *Exoprosopa*, *sensu stricto*, of the *E. dimidiata* group, show a similarly sinuous terminal vein in the discoidal cell.

The type of *Defilippia*, as fixed by Prof. Griffini in 1896, and more recently by Coquillett, is *E. minus*; and it seems convenient to employ Lioy's name for the present subgenus. Lioy's original diagnosis, however, agrees better with the characters of the *E. megerlei* group. Moreover, *E. megerlei* itself is the first species among those recorded by Lioy, and it is preferable to select it as the type, more especially since its rightful place is here. The generic name *Mima*, (Megerle) Meigen (1820), was founded on *A. phaeoptera*, and Coquillett claims that it must be used in place of *Exoprosopa*, which it antedates. The type species is not easily recognisable, but is probably the same as *E. megerlei*; thus the name *Mima* should replace *Defilippia*. I have not adopted it, however, because it is merely a *nomen nudum*.

The main characters of the present subgenus, which includes a great many Palaearctic species, are as follows:—

Frons rather narrow, not differing greatly in breadth in the two sexes; ocellar tubercle small but prominent, and sometimes prolonged behind; face prominent, conically produced, only in a few species bluntly convex; proboscis proportionally long, projecting, in some species considerably elongate. Antennae of variable shape, with third joint conical or rarely short, and with style varying from short or rudimentary to longer than half of third joint. Thoracic and scutellar bristles well developed, black (in *E. flavicans* alone yellow). Abdomen usually elongate and with parallel sides, but sometimes broad and conical. Legs with long spicules on tibiae; front legs not or very little abbreviated; front tibiae thin and long, usually smooth or very rarely beset with spicules; claws with pointed tooth. Wings as a rule long and narrow, often markedly so; basal hook stout; basal comb usually narrow, but broad in *E. grandis* group; terminal dip in second longitudinal vein more or less deep; marginal

cross-vein recurrent; first posterior cell open, sometimes greatly narrowed or even closed on wing-margin; discoidal cell long and narrow, very acute outwardly, its terminal vein being usually long and very regularly S-shaped, and as long as or a little shorter than basal vein of third posterior cell; discoidal cell never much dilated at end, even if sometimes its terminal vein be rather short and less horizontal; alula usually short and reduced, but long in *E. grandis* group. Wings rarely hyaline, or only with fore border narrowly infuscated; usually wings either wholly infuscated, or with broad basomarginal infuscation, with dark spots and reticulation, or with two more or less regular dark bands.

The rather numerous species before me can be distinguished as shown in the following table in which are likewise characterised the different groups of the subgenus.

- 1 (38). Front tibiae smooth.
- 2 (11). Vein between second and third posterior cells much contorted, thus second posterior cell at end twice or thrice as narrow as third; second vein at end with a deep and double dip, which terminates abruptly; marginal cross-vein S-shaped and strongly recurrent; wings narrow.
- 3 (4). Sternopleura with a patch of silvery scales; proboscis only slightly projecting; wings with two very broad, parallel, black or brown cross-bands, and with first posterior cell greatly narrowed at end (*E. pectoralis* group).
- 4 (3). Sternopleura clothed with hair and devoid of scales; proboscis more projecting, as far as antennae; wings wholly infuscated, with clear apex and clear centres to certain cells; first posterior cell less narrowed at end (*E. megerlei* group).
- 5 (6). Thorax, scutellum and abdomen clothed with long, erect hair, even in middle; wings less dark, only shaded, hyaline spot in discoidal cell being united with hyaline indentation on hind border.
- 6 (5). Body devoid of long, erect hair; wings blackened or even black, with a small and isolated, hyaline or subhyaline spot in discoidal cell.
- 7 (8). Scutellum and abdomen red; hair on sides of thorax and at base of abdomen bright orange; legs entirely yellow; marginal cell hyaline at end, so that in hyaline apex of wing there are two free veins.
- 8 (7). Scutellum and abdomen entirely black, even on venter; hair on sides of thorax and base of abdomen black; legs entirely or mainly black, only in part reddish in immature or denuded specimens; marginal cell blackened to end, therefore a single free vein visible in hyaline apex of wing.
- 9 (10). Collar with reddish hair; abdomen with black scales alone; apex of wing quite hyaline. *compar*, sp. nov.
- 10 (9). Hair of collar as elsewhere, entirely black; abdomen with both black and white scales; tip of wing infuscated or even black like remaining portion. *nigerrima*, sp. nov.
- 11 (2). Vein between second and third posterior cells straight or nearly so, and if rarely it is slightly bent, second posterior cell as broad as, or only a little narrower than third.
- 12 (37). Wings with rich and extensive markings, spotted, reticulate or banded; thoracic and scutellar bristles black.
- 13 (26). Second longitudinal vein at end with a deep, double dip, which terminates abruptly; marginal cross-vein S-shaped and strongly recurrent; species of smaller size and elongate shape, with either

villosa, sp. nov.

noctilio, Klug.

- wholly infuscated, or spotted, or reticulate, rather narrow wings (*E. venosa* group).
- 14 (17). Wings long and narrow, almost stalked, uniformly infuscated, without clearer parts at end or on hind border, but with distinct darker clouds on cross-veins and bifurcations; claws with short tooth.
- 15 (16). Wings very long and narrow, uniformly blackened, with less distinct darker clouds; hair on notopleural region and on first abdominal segment in part black. *dolichoptera*, sp. nov.
- 16 (15). Wings less long and less narrow, uniformly infuscated, with numerous distinct blackish clouds, some of them situate on fourth vein; hair on notopleural region and first abdominal segment entirely yellowish. *neurospila*, Bezzi.
- 17 (14). Wings shorter and broader, not stalked, with clear apex and clear hind border, in which veins are spotted or margined with fuscous.
- 18 (21). Veins at apex and on hind border of wings with broad fuscous borders.
- 19 (20). Base of antennae, scutellum, sides of abdomen and legs reddish or yellow; pleurae for most part with yellowish hair, even on metapleurae; wings less dark. *venosa*, Wied.
- 20 (19). Antennae, scutellum, abdomen and legs entirely black; pleurae entirely black-haired; wings blacker. *nigrovenosa*, sp. nov.
- 21 (18). Veins at apex and on hind border with fuscous spots, sometimes in part confluent.
- 22 (23). Scutellum black; third antennal joint short, broad at base and quickly attenuated into a short styloform portion, bearing a style as long as joint itself. *maculosa*, Wied.
- 23 (22). Scutellum red; third antennal joint elongate, conical, with short or even rudimentary style.
- 24 (25). Third antennal joint with short but distinct style; marginal cross-vein provided with an appendix; brown spots on wings less numerous and isolated. *maculifera*, Bezzi.
- 25 (24). Third antennal joint without distinct style; marginal cross-vein without appendix; brown spots on wings more numerous and in part confluent. *connivens*, sp. nov.
- 26 (13). Second vein at end with a simple and less-marked dip, joining costa at an acute angle; marginal cross-vein less curved and less recurrent; more robust species of larger size and broader shape, with broad and banded wings; claws with pointed tooth (*E. grandis* group).
- 27 (34). Hind tibiae on outer side with dense fringe of short hair, among which usual spicules of outer row are not distinct, pleurae devoid of white scales; stouter species.
- 28 (33). Wings with black base, and broad complete black band on middle; axillary lobe short and broad.
- a (b). Head black; hyaline middle band on wings broad and not oblique, but extending only to fourth longitudinal vein. *curvicornis*, sp. nov.
- b (a). Head red; hyaline middle band on wings narrow and oblique, or, if broad and not oblique, extending to first longitudinal vein.
- 29 (30). Hyaline middle band on wings broad, not oblique, and extending to first longitudinal vein; thoracic hair entirely black, only that in middle of collar yellow; bands on wings deep black. *senegalensis*, Macq.
- 30 (29). Hyaline middle band narrow, oblique and only reaching fourth longitudinal vein.
- 31 (32). Hair on thorax and in metapleural tuft entirely black, only a few hairs in middle of collar being yellow; only extreme base of wings yellowish. *praefica*, Loew.
- 32 (31). Hair on thorax and in metapleural tuft entirely whitish; wings variegated with yellowish to middle of costal band. *strenua*, Loew.
- 33 (28). Head black; wings with infuscated basal half, and beyond middle with an ill-defined dark band, which does not reach hind border, discoidal cell being almost completely hyaline; axillary lobe narrow and long. *arcuata*, Macq.

- 34 (27). Hind tibiae on outer side with usual row of spicules; head black; pleurae with white scales in middle, at least on sternopleura; bands on wings irregular.
- 35 (36). Wings very variegated, with anal and second basal cells broadly hyaline, middle dark band being divided behind, and with some isolated dark spots in hyaline apex. *hirtipes*, Loew.
- 36 (35). Wings not so variegated, with second basal cell infuscated to end, with middle dark band simple, and destitute of isolated dark spots at apex. *eclipsis*, sp. nov.
- 37 (12). Wings entirely hyaline, with only costal cells pale yellowish; thoracic and scutellar bristles yellow (in case of present species) (*E. minos* group). *flavicans*, sp. nov.
- 38 (1). Front tibiae with well-developed spicules; first posterior cell greatly narrowed at end; wings wholly infuscated; abdomen with scales on sides (*E. lepidogastra* group).
- 39 (40). First posterior cell almost closed on wing-border; legs, antennae and scutellum entirely black; wings with apex and hind border clearer than anterior half. *lepidogastra*, Bezzi.
- 40 (39). First posterior cell a little broader at end; tibiae and first and second joints of antennae reddish; scutellum with red hind border; wings wholly infuscated. *mydasiformis*, sp. nov.

Group 1. *E. pectoralis*.

This group shows the same venational characters as the following one, from which, however, it is sharply differentiated by the sternopleura being clothed with scales, and by the very characteristic wing-pattern, which is reminiscent of that of some species of the *E. grandis* group. The sternopleural patch is perhaps an indication of affinity with the subgenus *Cladodisca*, group *E. rivularis*.

The group so far as known has no Ethiopian representatives, and consists of only three species: the Mediterranean *E. pectoralis*, Loew (1862), and *E. truquii*, Rondani (1863), the latter being the form from Cyprus mentioned but not described by Loew in 1869; and the Persian *E. lucidifrons*, Becker (1913).

Group 2. *E. megerlei*.

The *E. megerlei* group is well represented in the Palearctic and also apparently in the Ethiopian fauna. It is at once distinguished by the elongate body, long proboscis and very long wings, which exhibit a very peculiar venation, and have a constant and homogeneous coloration. In both the *E. pectoralis* and *E. megerlei* groups the apex of the wings is very characteristic: the third longitudinal vein ends further from the tip of the wing than does the first vein, so that the marginal and second outer submarginal cells are broader than usual; the upper branch of the cubital fork is less widely divergent at the base, and sometimes even scarcely diverges at all.

Of Mediterranean and Ethiopian species, the following belong here: *E. megerlei*, Meigen (1820) (*A. vespertilio*, Meigen); *E. mayeti*, Bigot (1888); *E. lugubris*, Macquart (1840); *E.*

vesperugo, A. Costa (1893); *E. noctilio*, Klug (1832) (*E. marginalis*, Walker, 1871); *E. nigrifera*, Walker (1871); *A. biguttatus*, Macquart (1834); *E. consanguinea*, Macquart (1840); and the doubtful *A. phaeoptera*, Meigen (1820).*

203. *Exoprosopa (Defilippia) villosa*, sp. nov.

A black, rather aberrant species, differing from any other on account of the entire body being clothed with very long, and erect black hair.

Type ♀ from Nyasaland Protectorate, Blantyre, 20 April, 1910 (*Dr. J. E. S. Old*); this is the specimen doubtfully referred by me (*Trans. Ent. Soc. London*, 1912, p. 639) to *E. venosa*, Wied., in a paragraph in which I made mention of the peculiar long hairs on the abdomen: the British Museum likewise possesses an additional ♀ from the same locality, 4 May, 1914 (*Dr. J. B. Davey*).

♀. Length of body 12 mm.; length of wing 16 mm.; length of proboscis 4 mm.; breadth of wing 5 mm.

Occiput black, with yellowish scales near eyes; frons black a little depressed at vertex, about one-sixth of total breadth of head and becoming slightly broader anteriorly, clothed with long dense erect black hair, and with yellowish scales on anterior half; ocellar tubercle ovate, black, rather prominent. Face black, short, conically produced, emarginate at extremity, and clothed with black hair, forming a dense fringe along mouth borders; latter, also jowls posteriorly, dark reddish. First and second joints of antennae black and black-haired, but ground-colour apparently dark reddish, at least below; first joint only a little longer than second; third joint wanting in case of type. Proboscis black, twice as long as head, palpi black, dark-haired. Thorax entirely black, dark grey dusted, clothed on back with black scales, and with erect black hairs, which are longer and more numerous than usual; lateral stripe of pale yellowish hairs present, but not very distinct; macrochaetae long and black; collar with some yellow hairs in middle, but entirely black on sides and beneath. Pleurae black, grey dusted and mainly black-haired; sternopleura devoid of scales, with erect black hairs and with some yellowish ones, which are shorter and depressed; metapleura with black bristles, and with some yellowish hairs intermingled. Scutellum black, dark reddish on hind border, clothed like thorax, with long black hairs on disc and black bristles behind. Squamae yellowish, blackish on sides, with partly dark, partly yellowish fringe; halteres black, with knobs paler below. Abdomen elongate, with parallel sides, rather convex, blunt at tip and in colour black, narrowly red on

* It would seem that the North American species *E. (A.) emarginata*, Macquart, and *E. decora*, Loew, should also be placed here; in several other species, such as *E. (A.) fascipennis*, Say, *E. eremita*, O.S., and *E. pavidia*, Will., the venation is very similar, but the wing-pattern is different.

sides of second, third and fourth segments; abdomen clothed on back with scattered, long, erect black hairs, and with black and white scales, latter forming two parallel linear cross-bands on hind border of each segment; hair on sides long and black, even on first segment, which however, like second segment, has a tuft of whitish hair on each basal angle; spines on ovipositor black; venter black (hind borders of segments narrowly reddish), clothed with pale scales and dark hairs. Legs entirely black, with black hair, black scales and black spines; front pair not abbreviated, with tibiae long but not thin, and smooth, and with tarsi short, with a short, soft pubescence; middle femora with four or five spines above, hind femora with a complete row beneath; spicules on tibiae long; claws black, narrowly red at base, with a long, pointed tooth. Wings very long, stalked at base, but rather broad; wings infuscated, but fuscous tint not so deep as in other species; apex of wing, and median spot in discoidal cell hyaline, but former divided by fuscous border of upper branch of cubital fork, and latter united with hyaline centre of third posterior cell; in addition there are several elongate, subhyaline streaks, viz. in marginal cell, at end of first submarginal cell, and in fourth posterior cell. Basal hook black, curved; basal comb narrow, entirely black; veins black; alula black, greatly reduced, almost vestigial, with short blackish fringe. Venation typical for the group, or even to be regarded as an exaggeration of normal type thereof, owing to strongly marked curvature of ends of marginal, submarginal and second posterior cells; middle cross-vein a little before middle of discoidal cell; first posterior cell of about equal breadth throughout its length; third posterior cell at end two and a half times broader than the second and one and a half times broader than fourth, and considerably shorter than latter at base; end of anal cell narrower than that of first posterior cell. In present species upper branch of cubital fork is distinctly more widely divergent than in allied species.

204. *Exoprosopa* (*Deflippia*) *noctilio*, Klug (1832).

A species of moderately large size, distinguished among the members of its group by the predominantly red colour of the abdomen and legs, and by the marginal cell being hyaline at the end.

The British Museum possesses a ♂ from Somaliland, Zaila, 27 May, 1895 (*Capt.*, now *Lt.-Col.*, C. G. Nurse).

Owing to the excellence of Klug's original figure, there can be no question as to the correctness of the identification of this species, the type of which was taken at Ambukol, in the Anglo-Egyptian Sudan. A synonym of *E. noctilio* is *E. marginalis*, Walk. (1871), of which the type, from Erythraea (Massowah), is in the British Museum. On the other hand, the accuracy of the determination of the specimen from Persian Baluchistan, recorded by Becker

in 1913 (*Ann. Mus. Zool. de l'Acad. Imp. des Sc. de St. Pétersb.*, T. xvii, p. 563) as *E. noctilio*, is open to grave doubt, since *E. megerlei*, Mg., to which according to Becker *E. noctilio*, Klug, is closely allied, is in reality a very different species. A few brief notes on *E. noctilio*, Klug, are appended.

Face almost entirely reddish, with a black spot on each side; antennal style half as long as third antennal joint; proboscis projecting as far as antennae. Hair of collar, notopleural and metapleural tufts, and hair at base of abdomen bright reddish-yellow. Front tibiae smooth, and rather thin and long; front tarsi long, and clothed with soft pubescence. Wings as in Klug's figure; very characteristic is free terminal curve in second vein, which bears before end an elongate dark spot, clearly shown in original figure; upper branch of cubital fork scarcely diverging at all, being throughout its whole length parallel to hind border of wing. Alula very short and transverse, with long yellowish fringe of broad scales, continued on to base of axillary lobe by shorter, narrower and blacker scales. Basal comb small, entirely black. Wings not distinctly stalked at base, and rather broad, measuring 6 mm. in width, by 17 mm. in length.

205. *Exoprosopa* (*Defilippia*) *compar*, sp. nov.

An entirely black species, with red collar and black wings, which are hyaline at the apex, and have some subhyaline spots in the centre and on the hind border.

Type ♀, and an additional specimen of same sex from N. Nigeria, Wushishi, Kaduna R., 20-30 October, 1909 (*Dr. A. E. Neale*); a third ♀ also from N. Nigeria, Zungeru, November, 1910 (*Dr. J. W. Scott Macfie*).

E. compar is closely allied to *E. megerlei*, Mg., and is probably only a variety of *E. consanguinea*, Macquart, which was described from Senegal; the latter species, however, has the scutellum and the sides of the abdomen red. *E. nemesis*, Fabr., which has a similar wing-pattern, has a different venation and thus belongs to a different subgenus.

♀. Length of body 10-12 mm.; length of wing 13-16 mm.; length of proboscis 4 mm.; breadth of wing 4.5-5 mm.

Occiput black, dark grey dusted, rather shining above, with some pale yellowish scales, denser near eyes, thus forming usual ring; central fringe black externally and reddish inwards; postvertical furrow short and expanded distally, occiput therefore being distinctly bilobate above; vertex separated from occiput by a transverse space; ocellar tubercle small and brownish. Frons black, occupying one-fifth of head, with erect black hair and scattered yellowish scales; face short, conically prominent, emarginate below, clothed like frons; mouth borders narrowly reddish. Antennae with first joint twice as long as second, dark reddish below, and black-haired; second joint blackish; third joint black, conical, rather short, with style of about equal

length. Proboscis black, long and pointed, projecting as far as antennae; palpi black, clothed with long black hairs. Thorax entirely black, clothed with black scales, and with short and sparse, black hair, devoid of lateral stripe of paler hair; collar reddish-yellow above, black on sides and below; macrochaetae well developed, black; sides and pleurae black, and entirely black-haired; sternopleura with short black hairs; metapleural tuft entirely black. Scutellum entirely black, clothed like thorax, with black bristles behind. Squamae black, with blackish fringe; plumula reddish; halteres ferruginous. Abdomen elongate, entirely black, with short black hair and exclusively black scales; on sides hair is long and wholly black, even on first segment; spines on ovipositor reddish and shining; venter entirely black, with black scales and black hair. Legs black, with black hair, scales and spines; ground-colour in case of femora and tibiae somewhat dark reddish; front legs not abbreviated, with tibiae long and smooth, but not very thin, and with tarsi long and clothed with short soft pubescence; middle femora with two or three spines, hind femora with a complete row; spicules on tibiae long; claws black, with long pointed tooth. Wings long and narrower than in *E. noctilio*, but at base less stalked than in *E. villosa*; basal hook black and stout; basal comb narrow and quite black; alula but little developed, transverse, black and with blackish fringe, which is continued on to base of axillary lobe. Wings uniformly blackened to ends of second and third veins; apex broadly hyaline, but marginal cell being blackened to end, there is in hyaline part only one vein, viz. upper branch of cubital fork, which is not edged with fuscous; in middle of discoidal cell, towards its lower border, is a faint subhyaline rounded spot; faint clear streaks also visible in ends of second, third and fourth posterior cells, and sometimes a similar streak in middle of axillary lobe; praediscoidal spot greyish, but sometimes indistinct. Veins black, with typical disposition; upper branch of cubital fork slightly but distinctly divergent; middle cross-vein before middle of discoidal cell; second posterior cell at end thrice as narrow as third; first posterior cell at end a little broader than anal cell at end.

206. *Exoprosopa* (*Desflippia*) *nigerrima*, sp. nov.

Closely allied to the preceding species, but distinguished by the collar and wings being entirely black, the wings being without a clearer apex and discoidal spot, or having such markings only indistinctly indicated.

Type ♂, type ♀, and some additional specimens from the Gambia, Saba, 7 March, 1911, Kaiaff, 1 April, 1911, Duniajoc, 24 April, 1911, and Barrending, 23 April, 1911 (*Dr. J. J. Simpson*); further examples from N. Nigeria, Ilorin, 20 February, 1912 (*Dr. J. W. Scott Macfie*); and Togoland, Kunkwa, 1-9 February, 1917 (*Dr. J. J. Simpson*).

♂♀. Length of body 9–12 mm.; length of wing 11–15 mm.; length of proboscis 3·5–4 mm.; breadth of wing 3·5–5 mm.

Head and its appendages as in preceding species, except that antennae are distinctly longer, third joint being more elongate conical, and style only half its length; in the Gambia specimens antennae are quite black, while in those from Nigeria basal joint of antennae has a reddish ground-colour, at least beneath. Thorax and scutellum as in preceding, but hair entirely black, even in upper part of collar; only plumula dirty whitish. Abdomen as in preceding, but with numerous white scales, which are more abundant on sides and on base of segments (such scales apparently entirely wanting in foregoing species). Legs as in preceding, but appearing deeper black, though in the Nigerian specimens they are more reddish. Wings as in preceding, with following differences: upper branch of cubital fork not abruptly divergent at base, or diverging very much less than in *E. compar*; apex of wing either not hyaline at all (being black like remainder), or infuscated; central spot in discoidal cell wanting or less distinct, like streaks on hind border; praediscoidal spot greyish, small, but distinct.

Group 3. *E. venosa*.

This group seems to be exclusively Ethiopian, and to be most abundantly represented in the extreme south of the Region. In the form of the marginal and submarginal cells it agrees with the *E. megerlei* group, but it differs in the shape of the second posterior cell, the vein dividing the latter cell from the third posterior cell being more regular, and not or only a little contorted. The discoidal cell is less regular, its terminal vein being sometimes much shorter than the preceding vein and less horizontal, although always very sinuous. The antennal style shows a tendency to atrophy. The wing-pattern is likewise characteristic, the reticulation or the darker spots being very evident, even if the wings are wholly infuscated.

207. *Exoprosopa* (*Defilippia*) *dolichoptera*, sp. nov.

An elongate species, with exceedingly narrow and long wings, which are uniformly blackened, and with entirely reddish antennae.

Type ♂, and six additional specimens of the same sex from N.-W. Madagascar, Majunga Province, Andranolava, 13–17 November, 1907 (*J. J. Lloyd*).

♂. Length of body 12–14 mm.; length of wing 16–18 mm.; breadth of wing 4·5–5 mm.

Occiput black, grey dusted, with yellowish scales near eye-borders and with blackish central fringe; postvertical furrow broadened behind, thus occiput distinctly bilobate above; eyes reddish-brown, with indentation of moderate depth, and with distinct bisecting line; vertex depressed and separated from

occiput by a furrow; ocellar tubercle dark reddish and small, but sometimes prolonged behind into a protuberance which reaches occipital furrow. Frons narrow, occupying at vertex one-seventh, and near antennae one-fourth of head, black, rather shining, narrowly reddish near antennae, with a narrow deep black elongate spot on each side in middle; frons clothed with erect black hairs, and in anterior half with numerous pale yellowish scales. Face entirely red, conically prominent, clothed like frons, emarginate below, and these bearing a short tuft of black hairs. Antennae entirely reddish; first joint one and a half times as long as second and clothed with short black hairs; third joint elongate conical, narrow at base, gradually tapering to a long point, which ends in an indistinct style. Proboscis black, as long as head, its tip projecting very little; palpi black, with dark hairs. Thorax black (dark reddish on postalar callosities), clothed with short, sparse black hair, and with yellowish scales; lateral stripe of whitish hair narrow, but distinct; collar reddish, but on sides with black hair, continuous

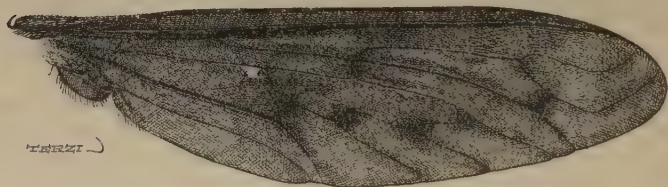


FIG. 24.—*Exoprosopa dolichoptera*, sp. nov. Wing of ♂. $\times 5$.

with that forming notopleural tuft; bristles long, black; pleurae black, grey dusted, reddish along sutures, with black hair in middle of mesopleura and pteropleura, and yellow hair on borders; sternopleura with erect yellowish and black hair, and with some scaly hairs; metapleura with entirely reddish-yellow bristles. Scutellum red, with black base and these clothed with black scales, while elsewhere scales are yellowish; hind border of scutellum with black bristles. Squamae dirty yellowish-brown, with yellowish fringe; plumula yellow; halteres ferruginous, with whitish knobs. Abdomen red, with first segment black, and with median black blotch on each of following segments, thus exhibiting a broad, median longitudinal stripe, interrupted by red hind borders of segments; abdomen clothed on back with black scales, and also with yellowish ones, forming a narrow complete cross-band on base of second segment; hair on sides short and black, pale yellowish only on basal angles of first and second segments; genitalia red, pale-haired; venter entirely red, with black scales and black hair, towards base with longer whitish hair. Legs entirely reddish-yellow, with scattered black scales and with thin black spines of medium length; front coxae with yellowish hairs, and also with some black, bristly ones;

front tibiae long and thin, smooth; front tarsi long, with short, soft pubescence; middle femora above with a row of five or six spines, hind femora with a complete row beneath; claws red, with black tip and short but pointed tooth. Wings very long, stalked at base; alula short and rather transverse; basal hook strong, blackish-brown; basal comb long and narrow, reddish, with short black bristles. Entire wing uniformly blackened, though cells at apex and along hind border sometimes with slightly clearer centres; praediscoidal spot whitish, small, rounded; darker clouds not sharply defined but quite distinct, and situate at base of second longitudinal vein, on middle cross-vein, on upper end of marginal cross-vein, on lower end of upper branch of cubital fork, and on extreme inner base of second, third, and fourth posterior cells. Veins black, with typical disposition; second longitudinal vein originating opposite middle cross-vein, and with a slight dip at end; upper branch of cubital fork very abruptly divergent at base; middle cross-vein situate a little before middle of narrow and very long discoidal cell; first posterior cell broadly open, about thrice as broad as anal cell at end; second posterior cell as broad as third, vein between them being almost straight; vein at base of third posterior cell half as long again as that at base of second; third posterior cell considerably shorter than the fourth; axillary lobe long and narrow. Alula with fringe of narrow blackish scales, continued on to base of axillary lobe.

208. *Exoprosopa (Defilippia) venosa*, Wiedemann (1819).

A black and red, mainly yellowish-haired species, distinguished by veins at apex and on hind border of wings being broadly bordered with fuscous.

This species, which was originally described from the Cape of Good Hope, has frequently been recorded from South and East Africa. There are in the British Museum two ♀♀—a very old specimen from S. Africa, 1844 (*Dr. A. Smith*), and another from the Cape Province, Simon's Town, February, 1893 (the late *P. de la Garde, R.N.*).

In the present species the vein between the second and third posterior cells is somewhat bent forward at the end, the second posterior cell thus being narrower at the end than the third; the basal vein of the third posterior cell is only a little longer than that of the second, and is strongly contorted, the middle third of the discoidal cell therefore being rather broad. The sternopleura is clothed with erect hair.

209. *Exoprosopa (Defilippia) nigrovenosa*, sp. nov.

Closely allied to the preceding species, but smaller, and distinguished by its entirely black scutellum, and by the pleurae being clothed for the most part with black hair.

Type ♂ and two additional specimens of the same sex from

Natal, Estcourt, September and October, 1896 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*); type ♀, and additional specimens of the same sex from Natal, Will Brook, near Estcourt, February and December, 1913, and January, 1914 (the late *R. C. Wroughton*).

♂♀. Length of body 9–10 mm.; length of wing 10–11 mm.

Head and its appendages as in *E. venosa*, but face entirely black, mouth borders alone being narrowly reddish; first and second joints of antennae quite black. Thorax on back with black scales, yellow scales being very sparse and scattered, thus no distinct longitudinal stripes; collar yellow, but on sides with black hair, continuous with abundant notopleural hair of same colour; pleurae entirely black, dark grey dusted and clothed with almost entirely black hair, a few yellowish hairs only in middle of meso- and pteropleura; metapleural tuft entirely black; sternopleura devoid of scales, with erect black hair. Scutellum entirely black, with scattered yellowish scales on sides and behind. Squamae black, with blackish fringe; halteres black; plumula dirty whitish, or yellowish. Abdomen entirely black, even on venter, its pattern as in *E. venosa*, but scales more white than yellow; thus it is probable that *E. venosa*, Macq. (1840—*nec* Wied.), which, according to Macquart, has white bands on the abdomen, is the same as the present species. ♂ genitalia black; spines on ovipositor shining yellow and curved. Legs as in *E. venosa*, but entirely black; front coxae with wholly black hairs; front legs considerably thinner and longer, with tibiae quite smooth. Wings precisely as in *E. venosa*, except that their tint is decidedly more blackish, and discoidal cell distinctly narrower, basal vein of third posterior cell being longer and almost straight at its outer end. First posterior cell more broadly open, and third narrower and distinctly longer at base. Alula rather short, but rounded, like that of *E. venosa*, with blackish fringe.

210. ***Exoprosopa (Deflippia) maculosa***, Wiedemann (1819).

A rather small species, with characteristic third antennal joint, entirely black scutellum, and wings adorned with numerous broad, rounded, darker spots at the apex and on the hind border.

E. maculosa, Wied., is common in South Africa, and has frequently been recorded from the Cape Province and adjacent countries. The British Museum possesses a single very old and badly preserved ♂ from S. Africa, 1844 (*Dr. A. Smith*).

The form of the third antennal joint in the present species is very characteristic, and is like that found in *Villa* or *Hemipenthes*, although the style is distinct and long. Sternopleura clothed with erect hair, and with some scales. Front legs thin and long, with smooth tibiae. First basal cell broader than usual; first posterior cell broadly open as a rule, but sometimes rather narrow at tip; second and third posterior cells of about equal breadth at end, vein between them being only moderately,

though distinctly, curved; basal vein of third posterior cell S-shaped, and a little longer than that of second; third posterior cell running rather far back at base; upper branch of cubital fork abruptly and widely divergent at base; alula narrow, but rounded.

211. *Exoprosopa* (*Defilippia*) *maculifera*, Bezzi.

Closely allied to the preceding species, but at once distinguished by the very differently shaped third antennal joint, and by the dark spots on the wings being less numerous and smaller.

The present species was described by me, in my memoir on the Bombyliid Fauna of South Africa, from a solitary ♀ from the Cape; there is in the British Museum an old and badly preserved specimen, without a head, from S. Africa, 1844 (*Dr. A. Smith*).

212. *Exoprosopa* (*Defilippia*) *connivens*, sp. nov.

Closely allied to the two preceding species, but distinguished by the presence of numerous, confluent dark spots on the wings and by its long third antennal joint, which bears no distinct style at the end.

Type ♂ and an additional specimen of same sex from S. Africa, 1844 (*Dr. A. Smith*).

It is probable that *E. maculosa*, Macquart (1840—*nec* Wied.), of which the author says that the scutellum is red, is the present species, with an abnormally closed first posterior cell. In the form of the antennae *E. connivens* approaches the condition seen in *E. capensis*, Wied., which seems to be allied, but, owing to its venation, must be placed in the subgenus *Exoprosopa*, *sens. str.*

♂. Length of body 9–10 mm.; length of wing 9–10 mm.

Occiput black, grey dusted, with an edging of pale yellowish or whitish scales near eyes; postvertical furrow deep, but narrow and not bilobate behind; eyes reddish-brown, with rather deep indentation and with long bisecting line; vertex not separated from occiput by a groove; ocellar tubercle small and simple. Frons black, narrow, clothed with erect black hair and yellowish scales; face entirely red, conically produced, with yellowish scales and black hairs, latter forming dense but short tuft on upper mouth edge. Antennae black, with first joint dark reddish in ground-colour and clothed with black hairs; third joint very long, narrow at base and gradually tapering to a long but not slender tip, blunt at end and, as it seems, with a rudimentary style. Proboscis black, as long as mouth opening, which is rather narrow. Thorax (detailed description impossible, owing to condition of type) black, with long black bristles; pleurae black, grey dusted, reddish beneath, clothed entirely with yellowish hair, even on metapleura; sternopleura with erect hair and white scales; squamae yellowish, with whitish fringe; halteres whitish. Scutellum red, with yellowish scales and long black

bristles. Abdomen shortly oval, rather convex, red, with first segment black, and with following segments each bearing a black median spot, these spots becoming successively smaller, and forming a broad median stripe, interrupted by red hind borders of segments; abdomen clothed with yellowish scales, and with narrow basal band of whitish scales on second segment; hair on sides black (pale yellowish on lateral extremities of first, and on anterior half of those of second segment); venter entirely red, with yellowish scales, and with whitish hair near base. Legs entirely reddish-yellow, with yellowish hairs on front coxæ; spines black and long; front legs slightly shortened, with tibiae rather thick but smooth, and with tarsi moderately long and clothed with short pubescence; middle femora with two, hind femora with five or six spines; claws red, with black tip and pointed tooth. Wing-pattern very like that of *E. maculosa*; marginal cell with broadly hyaline apex, and rounded hyaline spot before marginal cross-vein; spots on terminal vein of discoidal cell fused together to form a broad dark edging to this vein; hyaline spot in discoidal cell broader. Basal hook black; basal comb narrow and black; alula short but rounded, with blackish fringe, continued on to base of axillary lobe. First, third and fifth veins yellowish, remainder black; venation as in *E. maculosa*, but first posterior cell more narrowed at end; middle cross-vein situate at a greater distance before middle of discoidal cell; second, third and fourth posterior cells of about equal breadth at end; terminal vein of discoidal cell shorter and less horizontal.

Group 4. *E. grandis*.

The species of this group are characterised by being of considerable size, and by having broad bodies and broadly banded wings. The front legs are rather short, and sometimes have thickened tibiae, which are however quite smooth. The sternopleura is hairy, sometimes densely clothed with scaly hairs. The wings are distinguished by the breadth of their basal combs, and by the shape of the discoidal cell, which has the terminal vein S-shaped, horizontal, and shorter than that at the base of the third posterior cell; the second longitudinal vein has a smaller dip at the end, and terminates obliquely; the vein between the second and third posterior cells is only moderately contorted, so that these two cells are of about equal width at the end.

The Mediterranean and Caspian species belonging to this group are: *E. grandis*, Meigen (1820), *E. pallasii*, Wiedemann (1818), and *E. melaena*, Loew (1874); the Ethiopian species are those differentiated in the table.

213. *Exoprosopa* (*Defilippia*) *curvicornis*, sp. nov.

A beautiful species allied to *E. senegalensis*, Macq., but at once distinguished by the head being black, and by the hyaline middle

band on the wings extending from the hind margin only to the fourth longitudinal vein.

Type ♀, a solitary specimen from Kenya Colony, Kabete, 5 June, 1916 (*T. J. Anderson*). The wing-pattern is reminiscent of that of *E. pectoralis*, Loew, but the sternopleura is not clothed with scales; the wing-pattern is likewise reminiscent of that of *E. decipiens*, n. sp., in which, however, the first posterior cell is filled with black to the end.

♀. Length of body 16 mm.; length of wing 21 mm.; wing-expanse 47 mm.

Head entirely black; occiput above with scattered white scales, which are denser and form a band on eye-borders, and with yellowish central fringe. Frons with erect black hair, and with scattered whitish scales on anterior fore half; face blunt, moderately prominent, with hair and scales like those on frons,

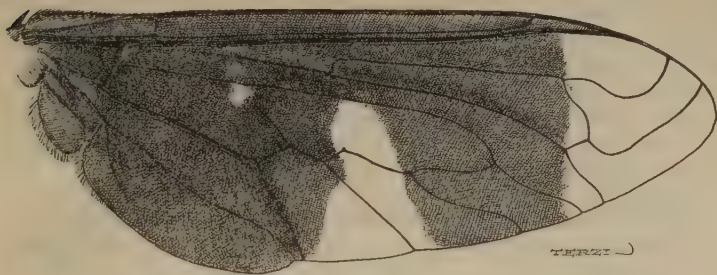


FIG. 25.—*Exoprosopa curvicornis*, sp. nov. Wing of ♀. $\times 5\frac{1}{2}$.

and with short oral fringe. Antennae with first and second joints red and clothed with black hair; third joint black, as long as first two joints together, more curved than usual on inner side, of almost conical shape, with a short, reddish terminal style, not more than one-third the length of third joint itself. Proboscis black, somewhat projecting. Thorax entirely black, with pleurae dark grey dusted; on back are black scales, and a narrow short stripe of white hair on each side, just above base of wing; all hair on back and pleurae black, except that forming collar, which is yellowish; metapleural tuft entirely black. Scutellum black, with black scales and black macrochaetae on hind border, like those of mesonotum. Squamae black, and black-fringed; plumula white; halteres black. Abdomen entirely black, black-haired and black-scaled, completely devoid of bands of white scales; black hair on sides short but dense, and exclusively present even on sides of first segment; venter black and black-haired; spines on ovipositor reddish. Legs black, with black scales and black spines; femora below partly reddish-brown; front tibiae short and thick, with small spicules; front tarsi densely haired; middle femora with two or three

strong spines on inner side, on distal third; hind femora with a complete row of spines below; hind tibiae densely but shortly fringed; claws black, with long, pointed basal tooth; hind legs very elongate, being about twice as long as legs. Wings long and broad, with black veins, black basal comb and black basal hook. Pattern velvety black, very well marked and sharply defined, consisting of two broad bands, proximal of which is the broader; wing may be said to be black, with a broad hyaline apex, and with a hyaline indentation on hind border, extending across middle of discoidal cell, and reaching fourth longitudinal vein. Praediscoidal spot fairly large, whitish and subquadrate. Black area at base extending to end of anal cell, which is completely filled, and covering broadly base of fourth posterior and of discoidal cell, entering even proximal basal angle of third posterior cell. Outer margin of second black band nearly straight, leaving free end of first submarginal, of first posterior and upper distal angle of second posterior cell. Venation regular; second longitudinal vein with a simple dip at end; first posterior cell narrowed at tip; discoidal cell acute outwardly; basal vein of second posterior cell slightly S-shaped; vein between second and third posterior cells contorted, end of second posterior cell being only half as broad as that of third. Axillary lobe broad and short, black and black-fringed, like short and broad alula.

214. *Exoprosopa (Defilippia) senegalensis*, Macquart (1840).

A large, handsome species, readily distinguishable owing to its red head and hyaline wings, which have a black base and a broad black band across the middle.

E. senegalensis, the type of which is a ♀ from Senegal, has never been recorded again since it was first described. The British Museum possesses two ♀♀ from Abyssinia, November, 1911 (*R. J. Stordy*). The species seems to be not uncommon in East Africa, since I have seen specimens of it in other collections. The original description may be amplified as follows:—

Length of body 17 mm.; breadth of abdomen 8 mm.; length of wing 20 mm.; breadth of wing 7 mm.; wing-expanse 46 mm.

Occiput very broad, and red, like rest of head, but central concavity and its borders black; postvertical furrow very narrow and not broadened behind; vertex separated by a furrow, but not by a great interval; ocellar tubercle small, blackish. Hair on frons short, yellowish on posterior, black on anterior half. Face bluntly convex, not conically prominent; proboscis black, thick, its extreme tip only slightly projecting. Thorax with black hair; collar with some reddish hair only towards its middle; no pale stripe on sides; macrochaetae long and black; pleurae clothed entirely with black hair, even on metapleura and sternopleura; latter without scales. Squamae black, with blackish fringe; plumula with dense, dirty whitish tuft; halteres black (not yellow, as stated by Macquart). Hair on sides of abdomen

short and entirely black, even on first segment; second and third segments, however, with a patch of white scales on each side, such scales less abundant on sides of other segments; spines on ovipositor black; venter entirely black, with black hairs and black scales. Front legs rather short and thick, with smooth tibiae and thickened tarsi, latter clothed with short pubescence; front coxae black and black-haired; femora with black scales; hind tibiae with dense, short, black hair, more or less concealing reddish ground-colour and forming a distinct fringe on outer side; claws very long and stout, black, narrowly red beneath near base, and with a long, pointed tooth. Wings with stout, black, basal hook, and with very broad, dark reddish, black fringed basal comb. Outer margin of black base gently convex, while that of middle band is roughly straight; alula short, black and black-fringed; axillary lobe very short and broad, with apical third hyaline. Veins bright yellow in hyaline median band, black elsewhere, even in hyaline apex; second vein with scarcely any dip at end; middle cross-vein almost exactly above middle of discoidal cell; first posterior cell narrow at base, broad in middle and slightly narrowed at end; second posterior cell a little narrower than third, its basal vein about as long as that of latter; base of third posterior cell not nearly reaching level of that of fourth posterior cell; anal cell narrowly open. Praediscoidal spot whitish, narrow; extreme distal angle of second basal cell hyaline, and included in hyaline middle band. Marginal cross-vein only moderately recurrent at base, and slightly curved.

215. *Exoprosopa (Defilippia) praeifica*, Loew (1860).

Allied to the preceding species, but smaller, more reddish and with the hyaline middle band on the wings much narrower, much shorter, and moreover oblique.

This species has never been recorded since it was originally described, from a ♀ from Port Natal. The British Museum possesses a ♂ from Natal, from the old Saunders collection; and two ♀♀ from "Port Natal," 1852 (*R. W. Plant*).

Loew has placed the present species, and the nearly related *E. strenua*, in the same group as the species of *Litorrhynchus*; but between these two groups of species there is only a very superficial resemblance in wing-markings. The following additions may be made to the original description.

Frons narrow, in ♂ distinctly narrower than in ♀; postvertical furrow narrow and not bilobate behind; head red, only occipital cavity black; frontal hair short and black; face bluntly convex; proboscis black, not projecting. First and second joints of antennae red, black-haired; third joint shortly conical, black, with terminal style as long as joint, itself. Thorax clothed on back with black hair, even on lateral margins; macrochaetae black and long; collar black, yellow in middle; pleurae black and reddish, entirely clothed with black hair, even on metapleura;

sternopleura devoid of scales. Squamae blackish-brown, with blackish fringe. Abdomen broad, oval, blunt at end; hair on sides entirely black, except that third and last two segments have on sides long, white, scaly hairs; venter with black hair; ♂ genitalia red, clothed with black hair; spines on ovipositor reddish brown. Front legs not distinctly abbreviated, with long, smooth tibiae, and long, thinly pubescent tarsi; outer side of hind tibiae with a complete row of dense bristly hairs, forming a fringe in place of usual spicules; claws black, with pointed tooth. Wings with black, curved basal hook, and with broad, red, black bristled basal comb; alula transverse, dark reddish, with blackish fringe. Marginal cross-vein only moderately curved and moderately recurrent; basal vein of third posterior cell only a little longer than that of second, vein between them being almost straight; axillary lobe short and broad.

216. *Exoprosopa (Defilippia) arcuata*, Macquart (1847).

This species is evidently allied to the last two species mentioned, but is distinguished by the occiput being black instead of red, and by its long wings, which have a different pattern.

The type, which was a ♀, was obtained in Madagascar, and the species was subsequently recorded by Bigot from the same island. It is with some hesitation that I refer to this species a series of specimens of somewhat larger size, with no arched bands on the abdomen, and with the veins at the apex of the wings not edged with fuscous. The specimens in question consist of three ♀♀ from N.-W. Madagascar, Majunga Province, Andranolava, November, 1907 (*J. J. Lloyd*); and a ♂ from Astove Island, Seychelle Is., 1907 (*P. R. Dupont*).

♂♀. Length of body 14–18 mm.; length of wing 16–20 mm.

Occiput black, with band of yellowish scales on eye-borders, and with yellowish central fringe; postvertical furrow narrow, not broadening behind. Frons narrow, of about equal breadth in both sexes, with erect black hair, and yellowish scales; face bluntly convex, not conical, clothed like frons. Antennae entirely black, with first and second joints black-haired; third joint regularly conical, gradually tapering to a thin point, with thin style one-third of length of joint itself. Proboscis black, thick, not projecting; palpi blackish, clothed with dark hair. Thorax black, clothed with black hair and yellowish scales, with a stripe of paler hair on each side, and with short but stout macrochaetae; collar entirely yellow; pleurae clothed mainly with yellow hair, but sometimes in middle of mesopleura with black hairs, while metapleural tuft has some black bristles beneath; sternopleura with erect dark yellowish hairs, and with some scale-like yellowish ones. Squamae reddish-brown, with golden fringe; halteres black, with knobs pale beneath. Abdomen oval, pointed at tip; first segment with orange hair on sides, second and third segments with yellowish hair on sides, and

terminal segments with black hair; on back there are black and yellowish scales, latter forming transverse band on base of second segment and short lateral bands on third, last two or three segments being almost entirely clothed with them; venter black, with whitish hair and scales; ♂ genitalia larger than usual, black and black-haired; spines on ovipositor black and straight. Legs entirely black, with black scales; front pair not much abbreviated, with smooth tibiae, and tarsi clothed with short pubescence; middle femora with two or three, hind femora with a complete row of spines; hind tibiae on outer side with fringe of short thick, black hair; claws black, with pointed tooth. Wings long and narrow; basal hook black; basal comb reddish, with black bristles and at base with yellowish tomentum. Alula infuscated, short but rounded, with long, dark fringe, continued on to base of axillary lobe. Infuscated area of wing extending from middle of axillary lobe to middle cross-vein; from centre of its outer margin a broad fuscous band, with ill-defined edges, extends to end of second and third posterior cells, but sometimes terminates in second posterior cell; discoidal cell almost entirely hyaline, being infuscated only at base and apex. In the Seychelles specimen the infuscation is darker, and extends in the middle to the fourth vein, while in the examples from Madagascar it extends only to the third vein; in the latter specimens the second basal cell is broadly subhyaline in its anterior half, the praediscoidal spot being therefore indistinct. Venation as in preceding species, but terminal dip in second longitudinal vein more pronounced, and marginal cross-vein more curved and more recurrent; middle cross-vein situate before middle of discoidal cell; first posterior cell broadly open; second and third posterior cells of about equal breadth at end; vein at base of third posterior cell longer than that at base of second; third posterior cell prolonged basally, being only a little shorter than fourth. Axillary lobe rather long and narrow.

217. *Exoprosopa* (*Defilippia*) *hirtipes*, Loew (1860).

A medium-sized species, differing from any other member of the group in the second basal and anal cells being broadly hyaline in the middle, so that the middle dark band appears to be bifid beneath.

The species was originally described from a ♀ from Caffraria, and was subsequently recorded from Durban by Miss Ricardo. The British Museum possesses numerous examples of both sexes from Portuguese East Africa, Lorenzo Marques, Matola, 18 February, 1907, Incanine, 19 December, 1906, Mavota, 18 February, 1907, Manhisa, 18 December, 1906, Inyak Island, 15 February, 1907, and Marracune, 21 February, 1906 (*F. D. McMillan*). These specimens are smaller than usual, measuring only 9–11 mm. in length. *E. exigua*, Macquart (1855), is nearly allied.

In the as yet undescribed ♂ the front tarsi have only the usual short pubescence; the genitalia are rather large and reddish, with pale yellowish pubescence; the frons is distinctly narrower than that of the ♀.

In the present species the front legs are considerably abbreviated; the sternopleura is densely clothed with white scale-like hairs, forming with those on the mesopleura a conspicuous white band in the middle of the pleura, which is not mentioned by Loew. The vein at the base of the third posterior cell is longer than that at the base of the second; the third posterior cell is only a little shorter than the fourth; the alula is rounded, and the axillary lobe short and broad.

218. *Exoprosopa* (*Defilippia*) *eclipsis*, sp. nov.

Allied to the preceding species but distinguished by the second basal cell being entirely infuscated, and by the middle cross-band on the wings not being divided into two parts beneath.

Type ♀ from N. Rhodesia, Feira, 29 April, 1911 (*F. V. Bruce-Miller*); an additional specimen of the same sex from the Transvaal, Pretoria (*W. L. Distant*). This species may perhaps be better placed in the *E. seniculus* group of the subgenus *Exoprosopa*, *sens. str.*

♀. Length of body 11.5–13 mm.; length of wing 12.5–14 mm.

Occiput black, with a band of white scales near eyes, and with short yellowish central fringe; postvertical furrow broad, bilobate behind; eyes with faint indentation, but distinct bisecting line; ocellar tubercle small and flat. Frons black, grey dusted, with erect black hair and abundant yellowish scales; face red, conically produced, with an elongate black spot on each side and clothed like frons. Antennae with first joint twice as long as second, dark red and black-haired; second joint globular, blackish; third joint black, elongate conical, with style less than half its length. Proboscis black, rather long, projecting as far as length of antennae; palpi yellow, pale-haired. Thorax black, with scattered black hairs and with yellowish scales, on each side with distinct stripe of pale yellowish hair; macrochaetae black and long; collar entirely yellow; pleurae grey dusted, reddish along sutures and below, entirely clothed with yellow hairs, even on metapleura; sternopleura with dense white scales, which are not, or only to a small extent, continued on to mesopleura. Scutellum red, with black base, clothed with yellowish scales and yellow hairs, with black bristles on hind border. Squamae yellowish, with white fringe; halteres ferruginous; plumula white. Abdomen oval, black, narrowly red on sides of second and of third segments; on back clothed with black, yellow and white scales, latter forming narrow basal band on second, a median interrupted band on third, and covering completely last two segments; hair on sides whitish on first, yellowish on second, third and fourth segments, black and yellowish on remainder; spines on ovipositor shining

yellowish; venter reddish, with blackish and white scales, and white hair. Legs reddish, with tarsi and femora black above, clothed with yellow scales; front coxae with yellow hairs; front legs not much abbreviated, with tibiae smooth, and tarsi clothed with rather long, erect pubescence, like that in case of preceding species; spines long and stout, two on middle femora, and a complete row on hind femora; claws black, with a long, pointed tooth. Wings rather broad; basal hook black, long and curved; basal comb broad and black, but densely clothed with yellowish tomentum; alula short, yellowish, with white fringe, continued on to short and broad axillary lobe. Infuscation not very dark; margin of fuscous basal area convex and running from a little beyond middle of axillary lobe to middle cross-vein, touching base of third posterior cell, and with emarginations in discoidal and anal cells; costal band slightly overlaps fourth vein, and ends at tip of first longitudinal vein, marginal cell being broadly hyaline at end; middle band begins at end of discoidal cell (which has its extreme apex hyaline) is emarginate on both sides in third posterior cell, and terminates in form of a spot on fifth vein; praediscoidal spot greyish and large; an elongate hyaline spot in infuscated base of first posterior cell. Second vein originating before or opposite middle cross-vein, and with a not very deep terminal dip; marginal cross-vein strongly recurrent; middle cross-vein a little before middle of discoidal cell; first posterior cell somewhat narrowed at tip, and only a little broader than end of anal cell; second, third and fourth posterior cells of about equal breadth at end; second posterior cell on a level with third at base, while third posterior cell is a little shorter than fourth.

Group 5. *E. minos*.

This group consists of medium-sized or small species, characterised by the wings being either entirely devoid of markings, or having only a narrow dark fore border. It includes several Mediterranean and Caspian species, such as *E. minos*, Meigen (1804); *E. minois*, Loew (1869); *E. dedecor*, Loew (1870); *E. semiflavida*, Becker (1906); and *E. farinosa*, Becker (1913). At the same time intermediate forms between the *E. minos* and *E. punctulata* or *E. stupida* groups of *Exoprosopa*, *sens. str.*, are of frequent occurrence. The group has not hitherto been recognised as represented in the Ethiopian fauna: the species recorded by me in 1912 as *E. minois*, Loew, was wrongly identified, and I have renamed it *E. erronea*. The latter belongs to the subgenus *Exoprosopa*, *sens. str.*; but the following rather aberrant species may be placed in the *E. minos* group.

219. *Exoprosopa* (*Defilippia*) *flavicans*, sp. nov.

A peculiar yellowish species, resembling certain Stratiomyid flies of the genus *Odontomyia*, and very distinct from any other

Ethiopian representative of the present subgenus on account of its bilobate face, yellow thoracic macrochaetae, and wings destitute of markings (aberrant characters for this subgenus).

Type ♀ from the Gambia, Jappeni, 29 March, 1911 (*Dr. J. J. Simpson*); an additional specimen of the same sex, also from the Gambia, Barrending, 23 April, 1911 (*same collector*).

♀. Length of body 10–11 mm.; length of wing 10–11 mm.

Head entirely yellow; occiput moderately prominent, with a black spot above on each side of rather broad and not very deep postvertical furrow, clothed with yellow scales and with a band of whitish scales on eye-borders; central fringe pale yellowish. Eyes dark red, with rather broad indentation and long bisecting lines; ocellar tubercle red, but situate on a black spot. Frons narrow, with scattered, short black hairs, and with dense yellowish scales; face short, bluntly convex, deeply emarginate on lower border in front, and thus appearing bilobate if viewed from above, clothed with yellowish scales and with short yellowish hairs on sides and beneath; mouth borders whitish. Antennae entirely yellow; first joint twice as long as second, with yellow hairs or only with a few black ones above; second joint globular; third joint shortly conical, with stout style half as long as joint itself. Proboscis black, somewhat projecting; palpi yellow, very long, thin and curved, clothed with pale hair. Thorax black on back, red on sides, densely clothed with yellowish scales, entirely concealing ground-colour; hair forming collar and clothing sides entirely yellow; macrochaetae thin, yellow; pleurae reddish, with black, grey dusted spot on meso- and sternopleura; pleurae clothed entirely with pale yellowish hair and whitish scales, which are denser on sternopleura. Scutellum entirely reddish, with dense yellowish scales, and with thin, yellow, shining bristles on hind border. Squamae pale yellowish, with whitish fringe; halteres ferruginous, with whitish knobs; plumula pale yellowish, like metapleural tuft. Abdomen reddish yellow, densely clothed with yellowish scales; when denuded, there is to be seen a broad median longitudinal stripe composed of black blotches, disposed in much the same way as the similar markings exhibited by the European *Odontomyia angulata*, Pz. (*cf. Verrall, British Flies*, Vol. V, Stratiomyidae, etc., p. 139, fig. 131); first segment on each side with a tuft of pale yellowish hair; remaining tergites almost bare, except that scales are interspersed with short, scattered, black hairs; venter entirely yellow, clothed with dense white scales and scattered white hairs; spines on ovipositor shining yellow. Legs entirely yellow (only tarsi blackened at tips), with pale yellowish hairs and scales, minute black hairs, and well-developed black spines; front legs slightly abbreviated, with tibiae moderately stout and smooth, or with a single short bristle above near base, and with tarsi clothed with short pubescence; middle femora with one or two, hind femora with five

or six spines; claws black, with reddish base and pointed tooth. Wings rather short, entirely hyaline, with a faint pale yellowish tinge, a little more intensified at extreme base and in costal cells; basal hook entirely yellow, very broad at base, but only slightly curved; basal comb narrow, pale yellow, with short black bristles on anterior margin; alula pale yellowish, short, transverse, but rounded, with whitish fringe. Veins entirely yellow, paler basally and darkened distally; second longitudinal vein originating opposite, just before, or a little beyond middle cross-vein, with rather deep dip at end; marginal cross-vein not very strongly curved, and moderately recurrent; upper branch of cubital fork widely and abruptly divergent at base; middle cross-vein on or slightly before middle of discoidal cell, which is narrow and long, acute at end and narrower than second basal cell, with vein between it and second posterior cell horizontal, long, and slightly S-shaped; first posterior cell widely open; second posterior cell at end of much the same width as third, with vein between them moderately curved; basal vein of third posterior cell S-shaped and longer than that of second; base of third posterior cell falling considerably short of that of fourth; anal cell widely open; axillary lobe moderately broad; praediscoidal spot indistinct or wanting.

Group 6. *E. lepidogastra*.

So far as at present known, this group appears to be exclusively Ethiopian. It is, moreover, distinguished by certain aberrant characters. Thus, the vein between the discoidal and second posterior cell is S-shaped, but much shorter than that between the same cell and the third posterior cell, and is not horizontal. This group therefore forms a connecting link with the subgenus *Exoprosopa*, *sens. str.*

220. *Exoprosopa* (*Defilippia*) *lepidogastra*, Bezzi (1912).

A black species, characterised by its peculiar venation, and by the abdomen being fringed on each side with outstanding scales.

In addition to the type and paratypes from Nyasaland, the British Museum possesses a ♀ from the same country (*R. Drummond*), which differs from the type only in having the metapleural tuft formed entirely by yellowish bristles.

In the present species the front legs are abbreviated, and their tibiae are rather thick and beset with well-developed spicules, chiefly on the outer side. The sternopleura is hairy, but is not clothed with scales.

221. *Exoprosopa* (*Defilippia*) *mydasiformis*, sp. nov.

Allied to the preceding species, but at once distinguished by the scutellum being red (except at the base), and by the completely blackened and much larger wings.

Type ♀, and an additional specimen of the same sex from Kenya Colony, Samburu, 30 October to 20 November, 1896 (*C. S. Betton*): the condition of these specimens, which appear originally to have been preserved in spirit, leaves a good deal to be desired.

♀. Length of body 12–14 mm.; length of wing 15–17 mm.; breadth of wing 6–6.2 mm.; wing-expanse 35–39 mm.

Head entirely black; occiput grey dusted, with whitish scales near eyes; postvertical furrow broadening behind, forming with furrow between vertex and occiput, a deeply incised Y. Eyes with deep indentation and long bisecting lines; ocellar tubercle oval, reddish-brown. Frons narrow at vertex, but more than twice as broad near antennae, clothed with black hair and whitish scales; face bluntly convex, clothed like frons; mouth borders reddish. Antennae long, with first two joints red, and clothed with black hairs; third joint black above and reddish below, narrow and elongate conical, with a thin style a little more than half as long as joint itself. Proboscis black, distinctly projecting; palpi black. Thorax black, with red postalar calli; vestiture of thorax destroyed in case of type and paratype, but vestiges of a lateral stripe of yellowish hair on each side distinctly visible; macrochaetae long and black; pleurae black, clothed for most part with black hair, but propleura with an orange coloured tuft, and some yellow hairs near the upper margins; metapleural tuft with black bristles, but in upper part apparently with some yellow hairs; sternopleura devoid of scales. Squamae brownish yellow, with dirty yellow fringe; plumula white; halteres black, with ferruginous stalks. Scutellum (denuded) black, with broad red hind border. Abdomen entirely black (denuded in case of type and paratype, but on sides with a trace of pale yellowish hair on first segment, and of black hair and long black scales on remainder); spines on ovipositor shining reddish; venter wholly black and (apparently) clothed with black scales. Legs black, with tibiae, base of tarsi and under side of femora dark reddish, but latter clothed with dense black scales; front coxae with black hairs; front legs somewhat abbreviated, with thick tibiae beset with short but distinct spicules, and with stout tarsi, which are clothed with short pubescence; spines long and black, on middle femora three to four, on hind femora a complete row; claws black, with long, pointed tooth. Wings long and broad, somewhat constricted at base, entirely and uniformly infuscated, with violaceous reflexions, thus reminiscent of wings of some species of *Mydas*; basal hook black, curved; basal comb narrow and long, dark reddish but with black bristles; alula transverse but rounded, with blackish fringe. Distinct rounded darker spots on upper end of marginal cross-vein, base of upper branch of cubital fork, both ends of terminal vein of discoidal cell (these spots often fused together so as to form a band), and at base of third and

of fourth posterior cells; dark spots on middle cross-vein, and on base of second longitudinal vein less marked. Praediscoidal spot greyish, elongate. Veins black, dark reddish only at extreme base. Terminal dip in second vein double but shallow; marginal cross-vein curved and recurrent; upper branch of cubital fork very widely divergent at base; middle cross-vein considerably before middle of discoidal cell; first posterior cell narrowed at end, but not so much as in preceding species; discoidal and second posterior cells as in preceding species, but distinctly broader; third posterior cell narrow and long, at end distinctly narrower than second, and at base about on a level with fourth posterior cell; anal cell broadly open; axillary lobe rather broad, but long.

Subgenus ix. *Pterobates*, subgen. nov.

Although apparently comprising but very few species, this subgenus seems to be very widely distributed in the Oriental, Mediterranean and Ethiopian Regions, with a single species in each. As type of the subgenus we may take the very singular South African *Anthrax apicalis*, Wied. The characters are as follows:—

Face prominent, but not conical, and ending bluntly; occiput broad, separated from vertex by a deep excavation; frons narrow; ocellar tubercle small, elevated but little; proboscis short, not or only a little projecting; third antennal joint elongate conical, with thin style, half as long as joint itself, or shorter. Thorax with well-developed, black macrochaetae, clothed like abdomen with metallic, shining scales; sternopleura hairy, without scales. Abdomen elongate, conical, rather pointed at tip. Front legs little or not at all abbreviated, front tibiae thin and long, smooth; spines on femora but little developed, hind femora with long scales at end; hind tibiae very densely feathered on both sides with long scales, but devoid of bristles; spicules on middle tibiae weak; tooth on claws pointed and long. Wings with long basal hook, and broad basal comb; alula narrow and transverse, but rounded. Wings black, with metallic reflexions, a hyaline apex, and sometimes yellowish or hyaline streaks in middle. Dip at end of second longitudinal vein very peculiar, short and narrow, but double and deep; marginal cross-vein short, straight, not recurrent; upper branch of cubital fork not, or not very widely divergent at base. Discoidal cell of peculiar shape, truncate at base, narrowed in middle with its anterior boundary strongly curved outwards before end; terminal vein of discoidal cell straight and perpendicular, cell itself, which is half as long as preceding vein, thus being less pointed at end; first posterior cell rather broadly open, second a little narrower than third at end, vein between them being almost straight; base of third posterior cell nearly on a level with that of fourth posterior cell; anal cell narrowly open; axillary lobe short and

broad. Squamae and alula with long fringe of very broad scales.

Appended is a table for the distinction of the species at present known, which are only three in number.

- 1 (4). Head and antennae black; face very prominent; collar white; base of abdomen with blackish hair on sides; wings black, with shining brownish spots on cross-veins and bifurcations.
- 2 (3). Pleurae with white tuft in front of base of wings; squamae with white fringe; wings with white stripe at end of second basal cell.
apicalis, Wied.
- 3 (2). Pleurae without white tuft; squamae with black fringe; wings with no white stripe at end of second basal cell. *pennipes*, Wied.
- 4 (1). Head and antennae reddish; face rounded; collar and base of abdomen with orange-coloured hair; squamae with black fringe; wings without shining brownish spots on cross-veins and bifurcations.
chalybaea, v. Röd.

222. *Exoprosopa* (*Pterobates*) *apicalis*, Wiedemann (1821).

Of this very characteristic and not uncommon South African species, the sole representative of its group in the Ethiopian Region, there is in the British Museum a ♀ specimen from N.-E. Rhodesia, Namadzi, 30 miles S.-E. of Hargreaves, 14 September, 1910 (*Dr. S. A. Neave*). Macquart confused the present species with the Oriental *E. pennipes*, Wiedemann (1821), but stated that his specimens had red hair on the sides of the first abdominal segment. *E. notabilis*, Macq. (1840), found in Senegal and supposed to be the ♀ of *E. apicalis*, Wied., has nothing to do with this species.

Subgenus x. *Argyrospila*, Rondani (1856).

This exclusively Mediterranean subgenus, while well represented in North Africa, is altogether absent from the Ethiopian Region. Although the West African *E. pusilla*, Macquart, and *E. jacchoides*, Bezzi, appear to have affinities with species belonging to the subgenus *Argyrospila*, they have a different venation, no hyaline "window-panes" in the wings, and no silvery bands on the abdomen. The principal features of the present subgenus, of which *E. jacchus*, Fabr., must be considered the type, are as follows:—

Face very conical; occiput well developed, separated from vertex by a depression; ocellar tubercle small; frons of ♂ distinctly narrower than that of ♀; proboscis not or but little projecting; third antennal joint conical, with style of half its length, or a little more; third joint sometimes short (in *E. cleomene*), when style is longer than joint itself. Thorax and scutellum with well-developed black macrochaetae; sternopleura hairy, without scales; metapleural tuft rather small. Abdomen broad, with conspicuous bands of silvery scales, more developed in ♂. Front legs long, with tibiae very long, thin and smooth, and with tarsi long and thin; spines on femora and tibiae well

developed; claws with long, pointed tooth. Wings with well-developed basal hook, but narrow basal comb; alula rather narrow, but rounded; second longitudinal vein short, usually originating a little beyond middle cross-vein, and with a narrow but double terminal dip, outwardly acute; marginal cross-vein straight and not recurrent; upper branch of cubital fork not very widely divergent at base; first posterior cell narrow, closed, and with a short stalk; second and third posterior cells of about equal width at end, vein between them being straight or nearly so; base of third posterior cell not nearly on a level with that of fourth. Discoidal cell simple, markedly truncate at distal extremity, its terminal cross-vein being straight, almost perpendicular, and less than half as long as preceding vein; anal cell broadly open. Axillary lobe rather long. Wing-markings very extensive, leaving only apex and some indentations on hind border hyaline; "window-panes" on cross-vein, as also indentations, perfectly hyaline and very characteristic.

The known species of the present subgenus are *E. jacchus*, Fabricius (1805); *E. italica*, Meigen (1820); *E. maenas*, Loew (1869); *E. baccha*, Loew (1869); and *E. cleomene*, Egger (1859). As already stated, these are all Mediterranean.

Subgenus xi. *Exoprosopa*, sens. str.

This subgenus is more heterogeneous than all the preceding subgenera, including as it does all the remaining species, which agree in venation and in usually having a not very extensive wing-pattern. The only character common to all is to be found in the form and position of the terminal vein of the discoidal cell. Some species of the *E. dimidiata* and *E. seniculus* groups, however, are difficult to recognise in this respect, having an oblique and sinuous terminal vein; but even in this case the partly black, partly hyaline wings will serve to distinguish them from the species of *Defilippia*.

As the type of the present subgenus Rondani selected *Anthrax capucina*, Fabricius. This species in general appearance, in wing-pattern and in the coloration of the abdomen is very like the species of *Argyrosipila*; moreover, on account of its wide geographical range, which includes Central Europe and the United States of America, it is somewhat aberrant, and perhaps the type of a special subgenus. In the latter case, the bulk of the species here recorded under *Exoprosopa*, sens. str., will have to receive a new subgeneric designation; I think, however, that subsequent investigation will disclose more than a single subgenus among these species.

The characters of the subgenus, according to what has been stated above, are very variable, but may be summarised as follows:—

Face conical, but sometimes bluntly convex or even rounded; occiput greatly developed, and usually with a space between

it and vertex; ocellar tubercle small; frons moderately broad, but sometimes very narrow. Proboscis short, not or but little projecting. Thorax and scutellum with macrochaetae, some times very short or even difficult to distinguish, and usually black, but sometimes yellowish; metapleural tuft well developed, sternopleura hairy. Abdomen broad and flat, or convex and conical. Legs with front pair usually long, but not infrequently abbreviated; front tibiae usually smooth, but sometimes with distinct spicules; spines usually well developed; claws with long and pointed tooth. Wings with stout basal hook, and narrow or broad basal comb; alula short, but rounded. Second longitudinal vein originating opposite or before middle cross-vein, with a more or less developed terminal dip; marginal cross-vein usually curved and recurrent, but sometimes to a very small extent; upper branch of cubital fork more or less widely divergent. First posterior cell as a rule broadly open, but sometimes narrowed, or even closed and shortly stalked; second and third posterior cells of about equal width at end, vein between them being typically straight; third posterior cell not reaching level of fourth posterior cell at base. Discoidal cell simple, typically short and obtuse or even truncate at end; vein between it and second posterior cell much shorter than that between it and third posterior cell; this vein usually straight and perpendicular, but sometimes oblique and more or less curved, though never regularly S-shaped; sometimes discoidal cell greatly dilated at end, above or below, but in latter case not angulate, being rounded and always devoid of appendix. Anal cell more or less broadly open. Axillary lobe usually short and broad. Wing-markings as a rule but little developed, but sometimes so extensive that only apex is hyaline. Generally speaking, wings either half black, half hyaline, with or without some isolated dark spots, and with or without dark projections and bands; or have dark fore borders; or some dark spots on cross-veins and bifurcations; or dark edgings to the longitudinal veins: not infrequently they are completely hyaline.

In the Palaearctic Region, or rather in the Mediterranean and Aralo-Caspian faunas, the subgenus is well represented, comprising a considerable number of species, which may be divided into three groups. The first group consists of the single species *E. capucina*, Fabricius (1781), which occurs in North and Central Europe, and attains an altitude of upwards of 6,500 feet in the Alps, being in Italy only a subalpine or alpine form. The second group is composed for the most part of desert or arenicolous species, having a very characteristic coloration, the first posterior cell often closed, and wing-markings varying from yellow to brown. The species of this group, which are very numerous in North Africa, in countries bordering on the Caspian Sea, and in Persia, include: *E. aegina*, Wiedemann (1828); *E. aeacus*, Meigen (1804); *E. telamon*, Loew (1869); *E. adelpha*, Becker

(1906); *E. suavipennis*, Macquart (1849); *E. mucorea*, Klug (1832); *E. griseipennis*, Macquart (1849); *E. olivierii*, Macquart (1840); *E. rivulosa*, Becker (1902); *E. tephroleuca*, Loew (1856); *E. nubeculosa*, Loew (1870); *E. latiuscula*, Loew (1873); *E. bagdadensis*, Macquart (1840); *E. occlusa*, Loew (1873); *E. completa*, Loew (1873); *E. melanoptera*, Wiedemann (1818); *E. arenacea*, Becker (1906); *E. beckeri*, Austen (1913); *E. evanescens*, Becker (1913); *E. clausa*, Becker (1913); *E. nonna*, Becker (1913); *E. fusconotata*, Becker (1913) and *E. sabulina*, Becker (1913). Some of the above-named species, such as *E. suavipennis* and *E. olivierii*, have also been recorded from the Ethiopian Region. The third group contains the species with metallic scales on the body, and with entirely hyaline, vitreous wings (in exceptional cases the fore border is narrowly infuscated), thus resembling the species of the *E. minos* group of the subgenus *Deflippia*: included in the third group we have *E. stupida*, Rossi (1790); *E. iris*, Loew (1869); *E. squamea*, Mulsant (1852); and *E. decrepita*, Wiedemann (1828).

In the Ethiopian Region the present subgenus is plentiful and must needs be divided into several groups, most of which, like the *E. dimidiata*, *E. semiculus*, *E. punctulata*, *E. balioptera*, *E. busiris*, *E. inermis* groups, etc., seem to be peculiar to the Region. I have before me a very large number of species, which can be distinguished by means of the following table, in which the groups are likewise differentiated.

- 1 (174). Wings with a more or less extensive pattern, never completely hyaline.
- 2 (11). Wings with very extensive dark pattern which is also well defined, almost entire wing being black or fuscous, with hyaline apex, and with hyaline indentations on hind border.
- 3 (6). Wings with yellowish or subhyaline "window-panes" on cross-veins and bifurcations (*E. pusilla* group).
- 4 (5). Metapleural tuft mainly yellow; first abdominal segment with whitish hair on sides. *pusilla*, Macq.*
- 5 (4). Metapleural tuft black; first abdominal segment with black hair on sides. *jacchoides*, Bezzi.
- 6 (3). Wings devoid of "window-panes."
- 7 (8). Wings entirely black to end of marginal cell, with narrow hyaline apex; third antennal joint broad at base; afterwards attenuated into a thin styliform portion with long terminal style (*E. nemesis* group).
nemesis, Fabr.
- 8 (7). Wings with hyaline indentations or with hyaline hind border, in addition to hyaline apex.
- 9 (10). Wings black to end of the first posterior cell, with broad hyaline apex and a hyaline indentation on hind border; third antennal joint as in preceding species. *decipiens*, sp. nov.
- 10 (9). Wings brownish black to end of discoidal cell, with broad hyaline

* In my account of the Bombyliidae of the South African Museum, I described a third species of this group, which differs from the other two species in having the discoidal cell entirely black, with only the upper outer corner narrowly hyaline, and in having the base of the wings broadly yellowish-brown. I called the species *E. formosula*.

- apex and broad hyaline hind border; third antennal joint elongate conical, with short style. *fuscescens*, Bezzi.
- 11 (2). Wings with less extensive dark pattern, hyaline parts being broader than black or fuscous ones, even though abbreviated bands or dentiform projections, issuing from basal dark portion, are present; in a few cases entire wing infuscated, without a definite differentiation of hyaline parts.
- 12 (83). Wings typically dimidiate, *i. e.* obliquely and broadly suffused with black, fuscous or grey on anterior half, even in anal cell and axillary lobe; posterior half clear, but sometimes broken by abbreviated bands, projections or isolated spots. Wing never clear or yellowish at base, or showing yellowish fenestrae ("window-panes"), and body never mainly red.
- 13 (30). Wings with black fore border in marginal cell ending abruptly, and reaching upper end of marginal cross-vein; from this border is given off an abbreviated band or a projection in middle of wing (wanting only in *E. scalaris*); wings always devoid of isolated spots or of infuscations of cross-veins (*E. seniculus* group).
- 14 (25). Middle brown band on wings prolonged beyond discoidal cell, and sometimes to hind border or nearly so.
- 15 (22). Vein between discoidal and second posterior cells long, horizontal, and S-shaped, much as in *Defilippia*.
- 16 (19). Discoidal cell greatly dilated at end, its inferior vein, which bears an appendix, being very much curved outwards; metapleural tuft mainly black; second posterior cell narrower than third at end.
- 17 (18). Wing-markings black; middle band rather broad. *morosa*, Loew.
- 18 (17). Wing-markings pale brown; middle band very narrow. *ignava*, Loew.
- 19 (16). Discoidal cell not or but little dilated at end, and without an appendix; metapleural tuft yellow; second posterior cell not narrowed at end.
- a (b). Sternopleura with patch of silvery scales; fuscous area in marginal cell ending before submarginal cross-vein. *hypargira*, Bezzi.
- b (a). No such patch on sternopleura; fuscous area in marginal cell ending at submarginal cross-vein.
- 20 (21). Middle band short, not extending over second posterior cell, and usually interrupted in outer angle of discoidal cell, which is hyaline; abdomen with bands of yellowish tomentum on fifth and sixth segments. *seniculus*, Wied.
- 21 (20). Middle band entire, and extending more or less to hind border of wing; abdomen with whitish tomentose bands only. *fastidiosa*, sp. nov.
- 22 (15). Vein between discoidal and second posterior cells short and nearly straight; discoidal cell not or but little dilated at end, and without appendix; metapleural tuft yellow.
- 23 (24). Middle band on wings with irregular outer edge, and abbreviated; abdomen narrow. *elongata*, Ric.
- 24 (23). Middle band with straight outer edge, and extending to hind border. *rectifascia*, sp. nov.
- 25 (14). Middle band vestigial, being reduced to a short projection not going beyond middle of discoidal cell, or even absent altogether; discoidal cell narrow, not dilated and never with an appendix, but with terminal vein short and straight.
- 26 (29). Fore dark border with short projection into outer angle of discoidal cell.
- 27 (28). Frons clothed with dense silvery scales; anal cell broadly hyaline at end. *argentifrons*, Macq.
- 28 (27). Frons devoid of such a silvery patch; anal cell narrowly hyaline at end. *scaligera*, Bezzi.
- 29 (26). Fore border without projection into outer angle of discoidal cell. *scalaris*, sp. nov.

- 30 (13). Wings with dark fore border in marginal cell tapering to a point, far from upper end of marginal cross-vein, and devoid of bands or projections issuing from it; if there be such bands, or dark fore border in marginal cell ends abruptly, isolated dark spots in hyaline apex also present.
- 31 (38). Wings with some isolated dark spots at apex or on hind border, even if consisting only in a faint shading of terminal vein of discoidal cell.
- 32 (37). Wings with some isolated dark spots in hyaline apex; dark fore border in marginal cell ending abruptly; terminal vein of discoidal cell short, straight, perpendicular (*E. capensis* group).
- 33 (34). A dark spot at end of second longitudinal vein; an abbreviated band in middle of wing, over end of discoidal cell.
madagascariensis, Macq.
- 34 (33). No dark spot at end of second vein; no such median band.
- 35 (36). Antennal style distinct; a kind of sinuous dark band on terminal vein of discoidal cell. *loewiana*, sp. nov.
- 36 (35). Antennal style rudimentary; no such band at end of discoidal cell; front tibiae beset with spicules. *capensis*, Wied.
- 37 (32). Wings without isolated dark spots at apex, but with a more or less distinct greyish or fuscous spot at end of discoidal cell, or a faint shading on terminal vein of that cell (wanting only in *E. dux*). (*E. heros* group).
- 38 (41). Discoidal cell not or but little dilated at end, its inferior vein being straight or only a little curved; dark fore border in marginal cell ending abruptly.
- 39 (40). Antennae black at base; metapleural tuft in part black; dark spot at end of discoidal cell well developed; base of cubital fork infuscated; posterior half of wings smoky. *infumata*, sp. nov.
- 40 (39). First and second joints of antennae red; metapleural tuft entirely yellowish; base of cubital fork not infuscated; apical spot in discoidal cell very faint; posterior half of wings hyaline. *obtusa*, sp. nov.
- 41 (38). Discoidal cell greatly dilated at end, its inferior vein being, strongly bent outwards; dark fore border in marginal cell tapering to an oblique point.
- 42 (45). Legs entirely or mainly black.
- 43 (44). Wing-pattern darker, with dark spot at end of discoidal cell very clearly defined; terminal vein of discoidal cell somewhat S-shaped.
protuberans, sp. nov.
- 44 (43). Wing-pattern greyish and very faintly indicated, with dark spot at end of discoidal cell less distinct, and consisting only in a faint shading of terminal vein, which is shorter and straighter. *eluta*, Loew.
- 45 (42). Legs red, at least in case of front pair.
- 46 (47). Wings with distinct and broad greyish patch in lower angle of discoidal cell. *heros*, Wied.
- 47 (46). Wings devoid of such a greyish patch. *dux*, Wied.
- 48 (31). Wings simply half dark, half hyaline, without isolated dark spots at apex, or at end of discoidal cell; brown fore border in marginal cell always tapering to a point, and ending much before the upper extremity of marginal cross-vein (*E. dimidiata* group).
- 49 (58). Vein between discoidal and second posterior cells long and strongly S-shaped; discoidal cell not dilated below.
- 50 (53). Antennae red at base.
- 51 (52). Discoidal cell infuscated in basal half, like anal and axillary cells; third and fourth posterior cells infuscated at base.
sigmoidea, Bezzi.
- 52 (51). Discoidal, anal and axillary cells infuscated at base only; third and fourth posterior cells entirely hyaline. *retracta*, sp. nov.
- 53 (50). Antennae quite black.
- 54 (57). Face conically prominent; body and legs black; dark fore border in marginal cell ending much before marginal cross-vein.

- 55 (56). Middle cross-vein situate near middle of discoidal cell; marginal cell infuscated beyond middle; first submarginal cell broadly infuscated at base; anal cell with basal half infuscated. *contorta*, sp. nov.
- 56 (55). Middle cross-vein much before middle of discoidal cell; marginal and first submarginal cells only narrowly infuscated at base; discal and anal cells infuscated at base only. *restricta*, Bezzi.
- 57 (54). Face bluntly convex; body and legs in great part red; marginal cell infuscated to marginal cross-vein; third and fourth posterior cells infuscated at base. *rufina*, Bezzi.
- 58 (49). Vein between discoidal and second posterior cells short and straight.
- 59 (76). Metapleural tuft yellowish or reddish, devoid of black bristles.
- 60 (73). Discoidal cell narrow or very narrow, before end little or not at all broader than at base.
- 61 (64). First posterior cell much narrowed or even closed at end; discoidal cell very narrow, at end narrower or as broad as at base; marginal cell infuscated to marginal cross-vein; scutellum entirely black.
- 62 (63). First posterior cell closed and stalked; third antennal joint very thin and elongate. *clausina*, sp. nov.
- 63 (62). First posterior cell narrowly open; third antennal joint less attenuate. *angusta*, sp. nov.
- 64 (61). First posterior cell more broadly open; discoidal cell a little broader at end than at base; scutellum mostly red on posterior half.
- 65 (72). Wing-pattern blackish or dark brown.
- 66 (71). First and second joints of antennae black.
- 67 (70). Scutellum red, with black base; abdomen red on sides and on venter; wings in both sexes with a more extensive black pattern, broadly filling base of third submarginal and of third posterior cells, and extending even to middle of axillary lobe.
- 68 (69). Abdomen in ♂ with a broad silvery patch on sides of second and third segments; dark area in marginal cell in ♂ ending obliquely; legs quite black. *dimidiata*, Macq.
- 69 (68). Abdomen in ♂ without such broad silvery patches; dark area in marginal cell ending equally abruptly in both sexes; legs in part dark reddish. *rubescens*, sp. nov.
- 70 (67). Abdomen entirely black, even on venter; wings in ♂ with black pattern less extensive, third submarginal, first posterior and axillary cells being only narrowly infuscated at base. *nigritella*, sp. nov.
- 71 (66). First and second joints of antennae red; first posterior cell narrower at end; limit of dark area not extending beyond middle of anal, and basal third of axillary cell. *discriminata*, Bezzi.
- 72 (65). Wing-pattern pale greyish and very faintly developed. *grisescens*, Bezzi.
- 73 (60). Discoidal cell very broad at end, approximately twice as broad as at base, or even more, its lower vein being broadly curved like upper one.
- 74 (75). Dark pattern on wings pale and less marked, its limits being less defined; sides of abdomen with yellowish hair extending to tip. *diluta*, sp. nov.
- 75 (74). Basal pattern on wings black and well marked, but very narrow; discoidal cell greatly dilated at end, and exhibiting an appendix. *stenomelaena*, sp. nov.
- 76 (59). Metapleural tuft entirely black, or with black bristles predominating.
- 77 (82). Abdomen in middle with white bands, or with white spots on black ground.
- 78 (81). Discoidal cell less dilated at end, and without appendix; antennae entirely black.
- a (b). First posterior cell closed, or nearly so, on wing-border; squamae with silvery fringe. *albofimbriata*, sp. nov.
- b (a). First posterior cell as widely open as usual; squamae with dark fringe.

- 79 (80). Metapleural tuft with yellowish bristles beneath, pleural hair being mainly yellow; wing-pattern narrow, discoidal cell being almost entirely hyaline. *hyalodisca*, Bezzi.
- 80 (79). Metapleural tuft entirely black, like other pleural hair; discoidal cell infuscated almost to middle of its length. *luctifera*, Bezzi.
- 81 (78). Discoidal cell very much dilated at end, and having an appendix; antennae red at base; species of larger size. *dilatata*, Bezzi.
- 82 (77). Abdomen in middle entirely clothed with dense silvery scales, ground-colour thus being concealed; species of smaller size.
argyrophora, Bezzi.*
- 83 (12). Wings not really dimidiate (even if sometimes with a broad dark fore border), but with a simple pattern, and as a rule devoid of abbreviated bands and isolated spots; anal cell and axillary lobe in greatest part hyaline; if bands or spots exceptionally present, wings either broadly yellowish, pale coloured at base, or have yellowish fenestrae, or body and legs mainly red, or abdomen conical; and if wings wholly infuscated, discoidal cell truncate at end.
- 84 (135). Abdomen conical, pointed at end and usually for most part red; thorax without black hair on pleurae; front tibiae usually smooth; terminal vein of discoidal cell short, straight, but oblique, therefore upper angle of discoidal cell acute (*E. punctulata* group).
- 85 (86). Front tibiae beset with distinct spicules; apical vein of discoidal cell less oblique; wings with brown fore border, and dark spotted cross-veins and bifurcations. *punctulata*, Macq.
- 86 (85). Front tibiae smooth, or, if rarely they are beset with spicules, wings not spotted; terminal vein of discoidal cell more oblique.
- 87 (94). Wings with two distinct dark bands, or at least with a dark pattern, which is divided into two parts by hyaline centre of discoidal cell; second basal cell in greatest part hyaline, like anal cell.
- 88 (91). Wings with two very distinct and broad dark bands.
- 89 (90). First posterior cell with a hyaline spot at base; wing-bands blackish and well defined.
- a (b). Face, first and second joints of antennae, and legs quite black; basal dark band on wings extending to axillary lobe; species of smaller size. *perpulchra*, sp. nov.
- b (a). Face, first and second joints of antennae, and legs reddish; basal band on wings not extending over anal cell, or only to a slight degree; about thrice as large as preceding species. *triplex*, sp. nov.
- 90 (89). Base of first posterior cell completely infuscated; wing-bands less deeply coloured, and not well defined, basal band not extending beyond anal cell. *tricolor*, Macq.
- 91 (88). Wings with less distinct dark bands, exterior one being reduced to a simple infuscation of outer vein of discoidal cell, and moreover being present only in ♀.
- 92 (93). No dark spots in hyaline apex of wing; legs and antennae entirely black.
- a (b). Wing-pattern less defined, with no distinct oblique basal band; discoidal dark spot in ♀ less developed; western species.
robertii, Macq.
- b (a). Wing-pattern more defined, with distinct basal band; discoidal spot in ♀ well developed; eastern species. *nova*, Ric.
- 93 (92). Hyaline apex of wing with two isolated dark spots; legs and first antennal joint red. *acrosphila*, Bezzi.
- 94 (87). Wings without distinct bands, second basal or discoidal cell never being hyaline within brown area; wings either with brown

* In my paper on the Bombyliid Fauna of South Africa I described, under the name *Exoprosopa tuckeri*, a South African species, distinguished from *E. argyrophora*, of Nyasaland, by having the metapleural tuft yellow above and black below, and the last two abdominal segments completely clothed with silvery scales.

- fore border, wholly infuscated, or hyaline with yellowish base and fore border.
- 95 (114). Wings with broad brown fore border, or even entirely infuscated.
- 96 (111). Wings with broadly hyaline apex, and hyaline hind border; pleurae with entirely yellowish or whitish hair.
- 97 (98). Wings of a diffuse yellowish-fusca tint; discoidal cell constricted near base, and greatly dilated at end; vein between first and second posterior cells much contorted; terminal dip in second longitudinal vein deep; macrochaetae yellow; abdomen without black hair, and entirely clothed with yellow scales. *gentilis*, sp. nov.
- 98 (97). Wings with broad brown fore border; macrochaetae black.
- 99 (110). Brown fore border on wings very broad, extending to second basal cell and part of discoidal cell, wings thus almost dimidiate; legs entirely black or dark reddish, without distinct black knees.
- 100 (105). Wings with black or brown base, narrow discoidal cell and long second posterior cell; antennae entirely black.
- 101 (104). Malagasy species, with well-defined fore border to wings, very narrow, parallel-sided discoidal cell, and second longitudinal vein with a deep dip at end; abdomen of ♂ with yellow scales on sides.
- 102 (103). Scutellum and legs black; spines on ovipositor yellow.
melanaspis, sp. nov.
- 103 (102). Scutellum and legs red; spines on ovipositor black.
nigrispina, sp. nov.
- 104 (101). Continental species, without well-defined fore border to wings, with broader discoidal cell, which is not parallel-sided, and with a slight dip at end of second vein. *nigrina*, sp. nov.
- 105 (100). Wings with yellowish base; discoidal cell broader, and second posterior cell shorter; abdomen without yellow scales on sides.
- 106 (109). First antennal joint black; fuscous tint of wings very faint.
- 107 (108). Legs mainly red; frons devoid of red spot. *parvula*, nom. nov.*
- 108 (107). Legs mainly black; frons in ♀ with median red spot.
punctifrons, sp. nov.
- 109 (106). First antennal joint red; fuscous tint of wings deeper.
palustris, sp. nov.
- 110 (99). Brown fore border to wings rather broad, but discoidal and second basal cells usually almost entirely hyaline; if these cells are infuscated, legs are pale reddish, with conspicuously black knees.
stannusi, Bezzi.
- 111 (96). Wings with infuscated apex and hind border; antennae entirely black; pleurae with black hair in middle, or on sides of collar; legs mainly black.
- 112 (113). Thoracic hair golden; larger species. *capnoptera*, Bezzi.
- 113 (112). Thoracic hair pale yellowish; smaller species. *fuscata*, sp. nov.
- 114 (95). Wings mainly hyaline, with narrow, yellowish or brownish fore borders, or sometimes greyish, with yellowish bases and with fuscous spots in middle, or with an extensive pattern, including short bands and yellowish fenestrae.
- 115 (134). Wings without extensive pattern, and without yellowish fenestrae.
- 116 (133). Thoracic macrochaetae, at least praesutural ones black; wings with open first posterior cell, and devoid of fuscous spots in middle.
- 117 (118). Wings with bases and fore borders light yellow; elongate species. *aurulans*, sp. nov.
- 118 (117). Wings with brownish bases and fore borders; stouter and broader species.
- 119 (124). Basal joints of antennae and legs entirely black.
- 120 (121). Abdomen clothed with white scales, forming six broad bands on second to seventh segments. *albata*, sp. nov.

* For *E. parva*, Ricardo (1901), nec Loew (1869).

- 121 (120). Abdomen without such bands, and with yellowish and black scales.
- 122 (123). Abdomen for most part red; cross-veins infuscated.
- 123 (122). Abdomen for most part black; cross-veins not infuscated. *inaequalipes*, Loew.
major, Ric.
- 124 (119). Basal joints of antennae and legs for most part red.
- 125 (132). Front tibiae smooth; vein dividing discoidal from second basal cell usually oblique, discoidal cell thus being acute at base; head black, at least behind; postalar and scutellar macrochaetae black; abdomen with pale and black hair.
- 126 (127). Face very conical and very prominent. *conochila*, sp. nov.
- 127 (126). Face usually less conical.
- 128 (131). Third antennal joint elongate conical, first joint with yellow hairs beneath; frons in ♀ rather broad; spines on ovipositor yellow; cross-veins in part infuscated.
- a (b). Cross-vein at end of discoidal cell long and S-shaped; wings not genuinely infuscated on fore border, with only a faint yellowish tinge on anterior half, costal cell more decidedly yellowish; cross-veins and bifurcations not infuscated. *decolor*, sp. nov.
- b (a). Above-named cross-vein shorter and shaped as usual; wings more or less broadly, but always distinctly infuscated on fore border; some cross-veins infuscated.
- 129 (130). Larger species; wings not infuscated beyond third longitudinal vein. *batrachoides*, Bezzi.
- 130 (129). Smaller species; wings infuscated to fifth vein. *latifrons*, sp. nov.
- 131 (128). Third antennal joint onion-shaped, broad at base and suddenly narrowing into a styliform point, bearing a style as long as joint itself; first antennal joint black-haired; ♀ with narrow frons and with black spines on ovipositor; cross-veins not infuscated. *villaeformis*, Bezzi.
- 132 (125). Front tibiae beset with spicules; vein dividing discoidal from second basal cell almost perpendicular, discoidal cell therefore truncate at base; head entirely reddish; legs and basal joints of antennae red, latter pale-haired; wings hyaline, with costal cell alone pale yellowish; abdomen devoid of black hair; postalar and scutellar macrochaetae yellow. *pallida*, sp. nov.
- 133 (166). Thoracic macrochaetae entirely yellow; first posterior cell closed and shortly stalked; wings with some fuscous spots in middle (*E. aegina* group). *suavipennis*, Macq.
- 134 (115). Wings with extensive but not pronounced pattern, including yellowish fenestrae and an abbreviated middle band; macrochaetae yellow. *aegina*, Wied.
- 135 (84). Abdomen usually not conical, and mainly black; thorax as a rule with black hair on pleurae; front tibiae often beset with spicules; terminal vein of discoidal cell straight and perpendicular, discoidal cell therefore markedly truncate at distal extremity.
- 136 (141). Wings punctate, with broad, sharply marked dark or black spots on cross-veins and bifurcations; hair on pleurae mainly black (*E. balioptera* group).
- 137 (140). First posterior cell open; no black spots on veins at apex and on hind border.
- 138 (139). Front tibiae with numerous long spicules; wings with yellowish patch in middle of brown fore border, and with no dark spot at end of anal vein; larger species. *poeciloptera*, sp. nov.
- 139 (138). Front tibiae smooth; wings without yellowish patch on fore border, and with brown spot before end of anal vein; smaller species. *balioptera*, Loew.
- 140 (137). First posterior cell closed and stalked; black spots before ends of veins at apex and on hind border; very small species. *cosmoptera*, sp. nov.

- 141 (136). Wings not punctate, or only with ill-defined shading on some cross-veins and bifurcations.
- 142 (171). Discoidal cell of regular shape; thoracic bristles developed as usual; femora spinose beneath; wings not wholly hyaline (*E. busiris* group).
- 143 (148). Wings uniformly darkened, not hyaline at apex or on hind border, sometimes with clearer stripes within cells, but without differentiated dark fore border; front tibiae with short but distinct spicules.
- 144 (147). Larger species, with very broad body; face with black hair and narrowly yellowish mouth borders; no silvery sternopleural patch.
- 145 (146). Hair on thorax and base of abdomen entirely black; antennal style short. *tabanoides*, sp. nov.
- 146 (145). Hair on sides of thorax, and on sides of base of abdomen bright orange; antennal style long. *referta*, sp. nov.
- 147 (144). Smaller species, with narrow, linear body; face with bright yellow mouth borders; thoracic hair golden yellow; abdomen with alternate white and black bands; sternopleura with silvery patch. *linearis*, sp. nov.
- 148 (143). Wings not uniformly darkened, with hyaline apex and hind border; if wings entirely smoky, fore border distinctly darker than remainder of surface; sometimes several veins in posterior half margined with fuscous.
- 149 (156). Wings with dark fore border, and moreover with some veins in posterior half margined with fuscous; antennal style short and thick.
- 150 (151). Gigantic species, without white bands on abdomen. *goliath*, sp. nov.
- 151 (150). Medium-sized species, with white bands on abdomen.
- 152 (153). Pleurae and breast with black hair, only notopleural and meta-pleural tufts bright orange; face conical and clothed with black hair. *busiris*, Jaenn.
- 153 (152). Pleurae and breast with entirely yellowish hair; face mainly yellow-haired.
- a (b). First posterior cell closed; head, base of antennae and legs entirely red. *magnipennis*, sp. nov.
- b (a). First posterior cell open, even if more or less narrowed at end; head, antennae and legs entirely black.
- 154 (155). Face conically produced, with tuft of black hair on upper mouth edge; hair on sides of abdomen mainly black. *atrinasis*, Speis.
- 155 (154). Face more rounded, without above-named tuft; hair on abdomen mainly yellowish. *brevinasis*, sp. nov.
- 156 (149). Wings with brown or yellowish fore border alone, and with veins in posterior half not margined with fuscous.
- 157 (158). Wings very long and narrow, with black fore border, and in ♀ with hind part smoky; metapleural tuft with some black bristles above. *spectrum*, Speis.
- 158 (157). Wings not so shaped, with dark or yellowish fore border, and with hind part hyaline; metapleural tuft devoid of black bristles.
- 159 (166). Wings with dark or blackish base and fore border.
- 160 (165). Antennae entirely black.
- 161 (164). Third antennal joint with long style.
- 162 (163). Frons in ♂ much broader than ocellar tubercle; thoracic hair bright orange; halteres black. *thoracica*, sp. nov.
- 163 (162). Frons in ♂ not broader, or narrower than ocellar tubercle; thoracic hair pale yellowish, and even white on mesopleura; halteres white; dark border of wings very narrow. *mesopleuralis*, sp. nov.
- 164 (161). Third antennal joint with short and thick style; thoracic hair whitish; squamae with white fringe; halteres dark. *albonigra*, sp. nov.

- 165 (160). Antennae with second joint red, and third reddish; face rounded. *penthoptera*, Bezzi.
- 166 (159). Wings with pale yellowish base and fore border.
- 167 (170). Antennae with short and stout, but well-developed terminal style; abdomen entirely black.
- 168 (169). Antennal style in same line with longitudinal axis of third joint, as usual; front tarsi with soft and short pubescence.
- a (b). Abdomen with tufts of black hair on sides; wings with fore border infuscated. *luteicosta*, Bezzi.
- b (a). Abdomen destitute of black tufts on sides; wings only with faintly shaded cross-veins and bifurcations in middle. *cervina*, Bezzi.
- 169 (168). Antennal style at an angle with terminal part of third joint, which is prominent, antenna thus forked at end; front tarsi with numerous, rigid, erect hairs. *fissicornis*, sp. nov.
- 170 (167). Antennae with very short, thin and inconspicuous style; abdomen with broad red hind borders to segments; smaller species. *tennocera*, sp. nov.
- 171 (142). Discoidal cell of irregular shape, being much constricted before middle and broadened apically, with prominent but rounded angle projecting into third posterior cell; wings unicolorous, shaded along veins; face rounded; thoracic and scutellar macrochaetae vestigial or indistinct; femora devoid of spines (*E. inermis* group).
- 172 (173). Third antennal joint conical, with well-developed style. *inermis*, Bezzi.
- 173 (172). Third antennal joint shortly conical at base, but prolonged into a very long styliform point, without distinct style at end. *pediformis*, sp. nov.
- 174 (1). Wings entirely hyaline, and generally vitreous or crystalline, sometimes with faint dark tinge in costal cells (*E. stupida* group).
- 175 (188). Head and body destitute of metallic shining scales; front coxae as a rule with long hairs.
- 176 (187). First posterior cell at end much narrower than second, even if not greatly narrowed at end.
- 177 (178). Thoracic and scutellar macrochaetae pale yellowish, very thin and hair-like; tibiae and first and second joints of antennae reddish.
- a (b). Wings with darkened veins, and acute discoidal cell; front coxae bare. *famula*, Bezzi.
- b (a). Wings with distinctly yellowish veins, and rather obtuse discoidal cell; front coxae hairy. *serva*, sp. nov.
- 178 (177). Thoracic and scutellar macrochaetae stout and mainly black; tibiae and first and second joints of antennae black.
- 179 (180). Third antennal joint yellow, long and linear, with rudimentary style. *heterocera*, Bezzi.
- 180 (179). Third antennal joint black, and differently shaped.
- a (b). Third antennal joint very short, as long as first, with style longer than itself. *brachycera*, sp. nov.
- b (a). Third antennal joint twice as long as first, with terminal style shorter than itself.
- 181 (182). Hair on pleurae and breast entirely pale yellowish; macrochaetae black. *erronea*, sp. nov.
- 182 (181). Hair on pleurae and breast partly black.
- 183 (186). Third antennal joint conical, with short style.
- 184 (185). Frontal hair black; thoracic hair of pale yellowish; postalar macrochaetae yellow. *ancilla*, sp. nov.
- 185 (184). Frontal hair entirely white; thoracic hair pure white; postalar macrochaetae black. *chionea*, sp. nov.
- 186 (183). Third antennal joint broad at base, afterwards tapering to a point. *hypomelaena*, Bezzi.
- 187 (176). First posterior cell very broad at end, about as broad as second. *latissima*, sp. nov.

- 188 (175). Head and body with metallic shining scales; front coxae almost bare, clothed only with scales.
 189 (190). Discoidal cell broad and twice as long as second posterior cell; sternopleura with metallic shining scales. *chrysellina*, sp. nov.
 190 (189). Discoidal cell narrow and very small, only a little longer than second posterior cell; sternopleura with dullish white scales.
parvicellula, Bezzi.

Group 1. *E. pusilla*.

Of this group we are at present acquainted with only three Ethiopian species, which in general appearance are much like the species of *Argyrospila*; they are distinguished, however, by having a different venation, and by the absence of the silvery abdominal bands; moreover, the fenestrae in their wings are not hyaline. The three African species referred to are *E. pusilla*, Macquart (1840), described from a ♀ from Senegal, and subsequently found by L. Fea in Portuguese Guinea; the closely allied *E. jacchoides*, Bezzi (1912), of N. Nigeria; and *E. formosula*, Bezzi (1921), which occurs in South Africa.

Group 2. *E. nemesis*.

The type of this group is *E. nemesis*, Fabr., a well differentiated species, which seems to be distributed throughout the Ethiopian Region. In general appearance, and in wing-pattern, the species of this group closely resemble those of the *E. megerlei* group of the subgenus *Defilippia*, but have a very different venation. *E. notabilis*, Macquart (1840) should probably be placed here.

223. *Exoprosopa* (*Exoprosopa*) *nemesis*, Fabricius (1805).

An entirely black species with quite black wings, which have a narrow, whitish-hyaline apex. Originally described from Guinea, but redescribed from South Africa under the name *A. nox* by Walker (1849). In addition to the type of the latter, the British Museum possesses a ♀ from Kenya Colony, Marsabit, October, 1911 (*Captain C. A. Neave*); a ♂ from the Nyasaland Protectorate, S. Nyasa, Nkudzi, 5 May, 1908 (the late *Captain Hallam Hardy, R.A.M.C.*); and a ♂ from N.-E. Rhodesia, Namadzi Stream, 30 miles S.-E. of Hargreaves, September, 1910 (*Dr. S. A. Neave*). Wiedemann's original description may be amplified as follows:—

Postvertical furrow narrow, and not broadening behind; central fringe on occiput blackish; eyes with small indentation, but long bisecting line; frons narrow, with black erect hair; face conically produced. First antennal joint black, black-haired and rather long; third joint dark reddish, at least beneath, broad at base, suddenly narrowed into a styliform point, bearing a thin style as long as, or a little longer than joint itself. Proboscis black, slightly projecting. Thorax with entirely black hair, even in collar and on metapleura; sternopleura with black hair; scutellum quite black; bristles well developed and black.

Squamae black, with blackish fringe; halteres black, with knobs greyish beneath; plumula white. Abdomen with entirely black hair, even on sides of first segment in ♀, while in ♂ corresponding hair and that on anterior half of second segment is white; venter black and black-haired; ♂ genitalia reddish beneath; spines on ovipositor black. Front legs not abbreviated, with tibiae long, thin, smooth, and reddish colour; front tarsi with short pubescence; coxae with black hairs; spines well developed, two on middle, four or five on hind femora; claws black, with pointed tooth. Wings long, but not narrow (length of body 9–11 mm.; length of wing 11–13 mm.), distinctly broader in ♀ than in ♂; basal hook strong, black, and curved; basal comb narrow and black; alula long, oblique, rounded, with blackish fringe, which is continued on base of short and very broad axillary lobe. Whitish apex of wing very narrow (marginal cell being black to end), only vein included in it being distal



FIG. 26.—*Exoprosopa nemesis*, Fabr. Wing of ♀. $\times 6$.

two-thirds of upper branch of cubital fork; four dark yellowish fenestrae small but distinct, and more developed in ♀. Terminal dip in second longitudinal vein double but not deep, and terminating abruptly; marginal cross-vein straight; upper branch of cubital fork at base widely divergent, but parallel to hind margin of wing; middle cross-vein before middle of discoidal cell; first posterior cell but little narrowed at end, and before its distal extremity very broad; second posterior cell as broad as third, vein between them being straight; third posterior cell at base not reaching level of fourth; discoidal cell much contracted below middle cross-vein, broadening at end but rather obtuse, its terminal vein being only slightly curved, oblique, and much shorter than preceding one. Anal cell narrowly open. Prae-discoidal spot greyish, but distinct only in certain lights.

224. *Exoprosopa* (*Exoprosopa*) *decipiens*, sp. nov.

A species readily distinguishable owing to its black wings, which have a hyaline apex and also a hyaline indentation on the hind border extending to the middle of the discoidal cell.

Type ♀, a solitary specimen from N. Rhodesia, Kanombo, 19 September, 1911 (*F. V. Bruce-Miller*).

This species shows a very deceptive resemblance to a species of *Litorrhynchus*, of the *L. erythraeus* group, but may at once be distinguished by its short proboscis, conical face, smooth front tibiae, and different venation.

♀. Length of body 13·5 mm.; length of wing 13·5 mm.; breadth of wing 5 mm.

Occiput black, dark grey dusted, with broad reddish patch on each side on level with indentation in hind border of eye; occiput clothed with yellowish scales, and with whitish scales next eye-borders; central fringe blackish; postvertical furrow deep, but not dilated behind; vertex separated from occiput by a deep, broad, Y-shaped furrow; ocellar tubercle dark brown, small but prominent. Frons narrow but conspicuously widened in front, occupying at vertex one-seventh and near antennae about one-third of total breadth of head; frons red, with black vertex, clothed with long and numerous, erect black hair and pale yellowish scales; face conically prominent, red, black near the mouth borders and more broadly on jowls; face clothed with pale yellowish scales and black hair, which forms a dense fringe on mouth borders. Antennae entirely red, only globular second joint being blackish; first joint more than twice as long as second, with black hairs; third joint short, about equal to first in length, with broad basal part approximately equal to second joint in size, and afterwards with a styliform portion, ending in a thin style, which is pale reddish and longer than third joint. Proboscis black, short and thick, not projecting with dark yellowish labella; palpi rather thick, curved, black and black-haired. Thorax black, clothed with short dark hair and dark reddish scales; collar entirely reddish; hair on sides reddish, on notopleural region with numerous, bristly, black hairs intermingled; macrochaetae well developed and black; pleurae red, with several black spots above, clothed with reddish hair, with some black hairs on middle of mesopleura, and some black bristles on pteropleura; sternopleura devoid of scales, with black hair alone; metapleural tuft with entirely reddish bristles. Scutellum red, clothed like back of thorax, with numerous black bristles on hind border. Squamae reddish-yellow, with white fringe; halteres ferruginous, with whitish knobs; plumula white. Abdomen as broad as thorax, elongate and obtuse at tip, black, with broad reddish hind borders to segments, last segments being almost entirely reddish; abdomen clothed with black scales, but segments from second to fourth with numerous white scales, which appear to form cross-bands, at least towards sides; lateral borders with abundant white hair on sides of first and on fore half of second segment, but with black hair elsewhere; last segment entirely clothed with white scales, and with a black fringe behind; spines on ovipositor yellow; venter dark reddish,

with scattered white scales and whitish hairs. Legs entirely reddish; front coxae with reddish and black hairs; front legs rather but not very short, with fairly stout, smooth tibiae, and with tarsi clothed with short, soft pubescence; middle femora in front with one or two, hind femora with four or five spines; claws black, with short but pointed basal tooth. Wings long and rather broad; basal hook long, black, curved; basal comb broad, black, but clothed with reddish scales; wings uniformly blackish-brown, with two hyaline but distinctly whitish patches only; one patch at apex, from end of first vein to end of third, first posterior cell being entirely filled with black to end, and marginal and first submarginal cells narrowly hyaline at end, while inner angle of second submarginal is black; second hyaline patch in shape of an indentation in hind border, extending from middle of third posterior cell to a little before end of anal cell, and running inwards nearly to upper boundary of discoidal cell, but not reaching fourth longitudinal vein; in addition there

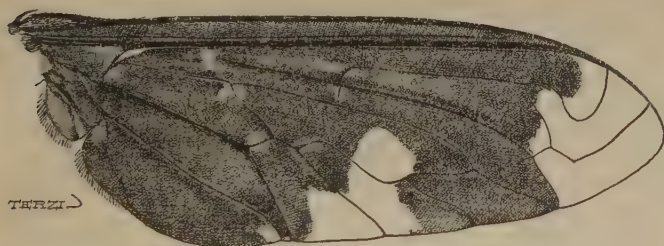


FIG. 27.—*Exoprosopa decipiens*, sp. nov. Wing of ♀. × 6.

is a narrow subhyaline spot at extreme end of axillary cell, just below end of anal cell; praediscoidal spot greyish, small and scarcely noticeable. Veins black; second longitudinal originating opposite middle cross-vein, and deeply bisinuous at end; marginal cross-vein moderately recurrent, upper branch of cubital fork widely divergent from main stem at base; middle cross-vein much before middle of discoidal cell; first posterior cell greatly narrowed at end, narrower than tip of anal cell; second, third and fourth posterior cells of about equal width at end, vein between second and third posterior cells rather sinuous, that between discoidal and second posterior cells somewhat S-shaped; base of third posterior cell not on a level with that of fourth; basal vein of third posterior cell longer than that of second, and considerably bent before its end, forming a prominent rounded projection into distal half of base of cell; discoidal cell very elongate and decidedly pointed at end. Alula blackish, with long blackish fringe, continued for a considerable distance along hind margin of the rather broad axillary lobe.

Group 3. *E. seniculus*.

The species of this group are characterised by their extensive wing-pattern, which shows abbreviated bands or projections, but never isolated fuscous spots in the hyaline portion. Distinction from the *E. heros* group is sometimes not easy; and it was even considered by Loew that *A. seniculus*, Wied., is only a variety of *A. heros*, Wied. The wing-pattern in some species is like that of *Litorrhynchus*, but the middle band is always abbreviated, and the proboscis is short.

225. *Exoprosopa* (*Exoprosopa*) *seniculus*, Wiedemann (1828).

A species readily recognisable owing to the wing-marking consisting of a broad blackish fore border, which is truncate at the end, and thence sends off an oblique, abbreviated band across the apex of the discoidal cell and base of the second posterior cell; from the closely allied *E. morosa*, Lw., and *E. ignava*, Lw., the present species is distinguishable at once by means of the characters indicated in the table.

Macquart placed this species in the genus *Litorrhynchus*, with which, however, it has only a superficial resemblance. *E. seniculus* is common in South Africa, and seems to occur throughout the Ethiopian Region, at any rate on the East Coast. In the British Museum there is a ♀ from Natal, Frere, 1913 (the late R. C. Wroughton); as well as specimens from Uganda (Dr. C. H. Marshall), and S. Abyssinia (R. J. Stordy).

The face in this species is conically produced, but the proboscis is only slightly projecting; the pleurae have entirely yellowish hair and bristles; the squamae are brownish, with a white fringe; the abdomen has alternate bands of white (on third, sixth and seventh segments) and (on second, fourth and fifth segments) yellow scales; the legs are black, and the claws have a long, pointed basal tooth. Regarding the wing-pattern, the anal and axillary cells are very broadly hyaline; the anterior dark border ends abruptly at the upper end of the marginal cross-vein; the abbreviated band is sometimes reduced to what is almost an isolated spot at the end of the discoidal cell, but is not produced beyond, or is produced only a little beyond the vein dividing the second from the third posterior cell. As regards the venation, the second longitudinal vein is rather deeply bisinuate at the end; the marginal cross-vein is strongly recurrent, and the upper branch of the cubital fork widely divergent from the main stem at the base; the first posterior cell is as broad at the end as the anal cell, and the second is narrower than the third, which is equal to the fourth; the third posterior cell at the base does not reach the level of the fourth; the discoidal cell is long, pointed at the end, and not dilated below, the vein between it and the second posterior cell being shorter than that between it and the third posterior cell, but horizontal and

rather S-shaped; the middle cross-vein is before the middle of the discoidal cell; the axillary lobe is short and broad; the alula dark yellowish, with a whitish fringe.

226. *Exoprosopa (Exoprosopa) fastidiosa*, sp. nov.

Very near the preceding species, but distinguished by differences in the abdominal pattern, and by the dark transverse band on the wings almost reaching the hind border.

Type ♀, a solitary specimen from the Nyasaland Protectorate, 1909 (*Dr. S. K. Norris*).

♀. Length of body 11 mm.; length of wing 14 mm.; breadth of wing 4.2 mm.

Head black, as in *E. seniculus*, Wied.; occiput with a band of white scales next eye-borders, and with postvertical furrow not dilated behind; frons with white scales on anterior half; antennae with first joint dark reddish (remaining joints wanting in case of type); face conically produced, clothed with black hairs and white and black scales; mouth borders yellowish, with fringe of black hairs. Thorax entirely black, clothed with yellowish hairs, which even form collar; lateral bristles black; pleurae with black and a few yellowish hairs; metapleural tuft yellowish, with some black bristles below. Scutellum dark red with black base, clothed like thorax, and with black bristles on hind border. Squamae brownish-yellow, with whitish fringe; halteres black, with knobs pale yellowish above; plumula whitish. Abdomen as broad as thorax, blunt at tip; entirely black, with white hair on sides at base and black hair on sides beyond posterior half of second segment; on dorsum, abdomen clothed only with white scales, and devoid of bands of yellow scales; white scales present and abundant on all segments, with exception of first; last segment with fringe of black hair; soines on ovipositor yellow; venter black and black-haired. Legs entirely black; front pair slightly abbreviated, with smooth tibiae and soft-haired tarsi; middle femora with two or three, hind femora with a complete row of spines; claws black, with short, pointed basal tooth. Wings long and narrow; basal hook black; basal comb small and black; pattern as in *E. seniculus*, Wied., but with cross-band less abbreviated, extending beyond the middle of third posterior cell and almost reaching hind border. Veins black, disposed as in *E. seniculus*; vein between discoidal and second posterior cell long, horizontal and S-shaped, present species thus differing from closely allied *E. elongata*, Ricardo (1901); vein between discoidal and third posterior cell almost straight.

227. *Exoprosopa (Exoprosopa) elongata*, Ricardo (1901).

Of this well-known and not uncommon South African species, the British Museum possesses a number of specimens of both sexes from:—the Cape Province (— *Cochrane*; *W. L. Distant*;

Miss Barrett); Natal (*R. W. Plant*; *W. L. Distant*; *J. P. Cregoe*; the late *R. C. Wroughton*); Zululand (*E. C. Chubb*); the Tranvaal, Pretoria (*W. L. Distant*); and S. Rhodesia, near Chirinda, 3,800 ft., 3 March, 1910 (*C. F. M. Swynnerton*).

228. *Exoprosopa* (*Exoprosopa*) *rectifascia*, sp. nov.

A pretty species, distinguishable at once owing to having bright orange hair on the sides of the thorax and of the base of the abdomen, conspicuous bands of white scales on the latter, and wings with the fuscous transverse band extending to the hind border and having its outer edge straight.

Type, a solitary ♀ from Angola, 1873 (*Mrs. Monteiro*). This species shows some points of agreement with the description of *Anthrax meigenii*, Wiedemann (1828), from an unknown locality.

♀. Length of body 14 mm.; length of wing 15 mm.; wing-expanse 34 mm.

Head black; occiput with deep and broad postvertical furrow, and with broad border of whitish scales near eyes; frons very narrow at vertex, being only one-seventh of head, while near antennae it is one-third of head; frons clothed with erect black hair, and with pale yellowish scales on anterior half; face conically produced, with fringe of black hair on mouth borders, and with pale yellowish and whitish, shining scales. Antennae entirely black; first joint with black hairs; third joint elongate, linear, not very broad at base, with thick style about half as long as joint itself. Proboscis black, rather prominent; palpi black. Thorax entirely black, with short black hair on back and with distinct stripe of pale yellowish hair on each side; macrochaetae black; collar entirely bright orange, like notopleural tuft; pleurae with black hair, but metapleural tuft bright orange. Scutellum black, dark reddish in middle and behind, with black scales at base, with yellowish hair, and with numerous black bristles on hind border. Squamae yellowish-brown, with yellowish fringe; plumula yellow; halteres black, with tips of knobs paler beneath. Abdomen at base broader than thorax, pointed at tip, shortly conical in shape, entirely black and clothed with deep black scales; first segment on each side with thick tuft of bright orange hair, remaining segments with black hair on sides; second segment with broad triangular spot of whitish scales on each side at base; third and fourth segments with complete basal band of white scales, which, especially on third segment, become slightly yellowish towards middle; fifth segment entirely black; sixth and seventh segments with band of shining white scales broadly interrupted in middle, seventh segment, moreover, with dense fringe of black hair on hind border; spines on ovipositor black; venter black, slightly greyish tomentose at base, clothed with black hair. Legs entirely black; coxae with black hairs; front legs abbreviated, with smooth tibiae and with the tarsi clothed with rather

long dark hairs; middle femora with two or three, hind femora with a complete row of spines; claws black, with short and pointed basal tooth. Wings hyaline, with darkish pattern very like that of *E. seniculus*; dark area ending abruptly in marginal cell, a little beyond marginal cross-vein; from this dark fore border, a dark band extends almost to hind margin, filling apex of discoidal, base of second and end of third posterior cell; this band shows a subhyaline stripe, respectively in centre of first submarginal, and in that of first and second posterior cells; its outer edge is perfectly straight; discoidal cell hyaline, being infuscated only at base and at tip; praediscoidal spot greyish and well developed; anal and axillary cells infuscated at base only. Basal hook black; basal comb narrow and black; veins reddish, darkened towards tips; second longitudinal vein originating before middle cross-vein, and with a single but deep dip at end; marginal cross-vein S-shaped, strongly recurrent at base; upper branch of cubital fork widely divergent; first posterior cell narrowed at end and only a little broader than anal cell; second and third posterior cells of about same breadth at end, and both much narrower than fourth; vein between second and third posterior cells almost straight; vein between discoidal and second posterior cell much shorter than last-mentioned vein and almost straight, discoidal cell being therefore rather obtuse at end; middle cross-vein situate before middle of discoidal cell; base of third posterior cell not reaching level of that of fourth; axillary lobe broad and short; alula dark, with dark yellowish fringe, which is continued on axillary lobe.

229. *Exoprosopa (Exoprosopa) argentifrons*, Macquart (1855).

A very pretty species, easily recognisable by its silvery frons, and the short projection from the dark fore border of the wing, at the end of the discoidal cell.

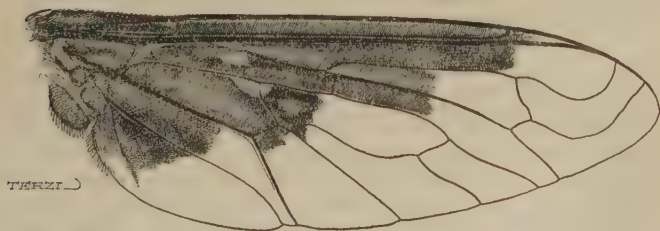


FIG. 28.—*Exoprosopa argentifrons*, Macq. Wing of ♀. × 8.

Originally described from a specimen from the Cape of Good Hope, *E. argentifrons* was recorded by me in 1912 from West Nyasa; in addition to a ♂ from the latter locality the British Museum possesses a series of specimens of both sexes, likewise

from Nyasaland, Fort Johnston, 1,200 ft., dry season, June-July, 1910 (*Dr. A. H. Barclay*).

In this species the frons, below the silvery patch, has a red spot which is as broad as the patch itself; the discoidal cell is very truncate at the base, the vein between it and the second basal cell being very short, straight and almost perpendicular. In the event of the silvery patch on the frons being unrecognisable owing to denudation, the species may be distinguished from the allied *E. scaligera* by the anal cell of the wings being more broadly hyaline.

In one specimen the dark projection at the end of the discoidal cell is not present, so that the validity of the following species (*E. scalaris*) becomes dubious, the only remaining points of difference being the smaller size and darker legs of the latter.

230. *Exoprosopa* (*Exoprosopa*) *scalaris*, sp. nov.

A very small species, which is evidently allied to the preceding but differs from it in having black legs, and is distinguished from any other member of the present group by the absence of a transverse band projecting from the dark fore border of the wing.

Type ♂, a solitary headless specimen from Nyasaland, Marimba, 2 June, 1912 (*J. G. Morgan*).

♂. Length of body 5 mm.; length of wing 6 mm.

Head wanting in case of type. Thorax black, clothed on back with minute golden yellow scales; collar entirely yellow, like hair in front and on sides; macrochaetae black; pleurae in middle with black hair, but dense metapleural tuft entirely yellowish. Scutellum entirely black, rather shining, clothed with scales like thorax, with black bristles on hind border. Squamae whitish; plumula yellowish; halteres blackish. Abdomen black, with red spot on each side of second and third segments, and with narrow reddish hind borders to terminal segments; long hair on sides of first and second segments entirely yellowish, hair elsewhere mainly black; tergites clothed with black and yellowish scales, latter forming basal cross-bands on segments, that on second being broader and more whitish than remaining bands; last two segments entirely clothed with silvery scales; genitalia dark brown; venter brownish, with greyish scales. Legs blackish-brown, with yellowish scales, tibiae having a reddish-brown ground-colour; front legs not abbreviated, with long, thin, smooth tibiae, and very shortly pubescent tarsi; middle femora above with three spines; hind legs wanting in case of type; claws black, with very small basal tooth. Wings hyaline, with well-defined blackish fore border, having on its inner margin four deep, equidistant, step-like notches; first notch in middle of anal cell; second over base of discoidal cell, just in front of base of third posterior cell; third in middle of first submarginal cell, occupying also base of first posterior cell; fourth or last notch before end of marginal cell, just opposite marginal cross-

vein. Axillary lobe infuscated only at its extreme base; praediscoidal spot greyish, quadrate, not very distinct. Basal hook black; basal comb small, black, with sparse golden scales; veins brownish, but costa and first longitudinal vein yellowish; second vein with simple, not very deep, terminal dip; marginal cross-vein straight, short, and not very oblique; upper branch of cubital fork widely divergent from main stem at base; first posterior cell very broadly open, thrice as broad as anal cell; second and third posterior cells of about equal width at end, and both narrower than fourth; discoidal cell short and truncate at end, vein between it and second posterior cell being straight and almost perpendicular; vein between discoidal and third posterior cell gently curved, and twice as long as last-mentioned vein; third posterior cell at base not reaching level of base of fourth posterior cell; middle cross-vein much before middle of discoidal cell; alula infuscated, with long blackish fringe, continued on to base of long axillary lobe.

Group 4. *E. capensis*.

The species of this group are distinguished by the presence of isolated dark spots in the hyaline parts of the wing, at the apex and on the hind border. There are no representatives of the group in the collection before me. The species appear to be mainly South African; but in my own collection I have an example of the group from Madagascar, in the shape of *E. madagascariensis*, Macquart (1849).

Group 5. *E. heros*.

This group consists of species which resemble those belonging to the following one, but usually show a dark spot at the base of the second posterior cell. The spot in question is, however, often very faintly indicated, as in *E. eluta*, Lw., or even wanting, as in *E. dux*, Wied.

231. *Exoprosopa* (*Exoprosopa*) *infumata*, sp. nov.

A black species, distinguished by the fore border of the wing being black and the posterior half smoky, the wing also having another fuscous spot in addition to that at the base of the second posterior cell.

Type ♂, type ♀, and an additional ♂ from N.-W. Rhodesia, Chilanga, 19 September, 1913 (*R. C. Wood*); also numerous specimens of both sexes from Nyasaland, Zomba, January–December (*Dr. H. S. Stannus*).

♂♀. Length of body 10–12 mm.; length of wing 10–12 mm.

Head black; occiput greyish, with short black hair, yellowish central fringe and yellowish scales near eyes; postvertical furrow deep, somewhat broadened behind; frons of equal breadth in both sexes, deep black, dull, clothed with erect black hair,

and with yellowish scales on anterior half; face conically produced, with yellowish scales, and with black hair, which forms an oral fringe; mouth borders dark yellow. Antennae entirely black; first joint with black hairs and much longer than second, which is globular; third joint elongate conical, not broadened at base, longer than first two joints together, with terminal style rather less than half its length. Proboscis black, not or very little projecting; palpi black, with blackish hairs. Thorax black, clothed with black hair on back, with some yellowish hairs intermingled, longer in front of scutellum and on sides, forming on latter a yellowish longitudinal stripe; collar yellowish; macrochaetae black; pleura with black hair, with some yellow hairs only in notopleural tufts and in upper part of metapleural tuft; sternopleura without yellow tomentum. Scutellum dark reddish, broadly black at base and there with black scales, clothed with yellowish tomentum on posterior half, and with black bristles on hind border. Squamae brownish, with white fringe; plumula yellowish; halteres black, with stalk dark yellowish at base. Abdomen as broad as thorax, suddenly narrowed at end, black and black scaled; on sides of second to fifth segments with white scales, forming broadly interrupted basal bands; only on sixth and seventh segments bands appear to be entire, as narrowly interrupted, seventh segment having, moreover, a black fringe on hind-border; long hair on sides of first three segments white, that on sides of remaining segments black; venter black and clothed for most part with black hair; ♂ genitalia black; spines on ovipositor blackish-brown. Legs entirely black, clothed with black scales, hair and spines; front legs abbreviated, with tibiae thick and smooth, and tarsi shortly pubescent; middle femora with one to three, hind femora with a complete row of spines; claws black, with long and pointed basal tooth. Wings with base and fore border blackish, and posterior half smoky; black area ending almost abruptly in marginal cell at end of marginal cross-vein, but along costa it is prolonged to end of second longitudinal vein; anal cell infuscated to middle, while axillary cell is fuscous at base only; broadest fuscous spot is at base of second posterior cell, in form of an irregular fuscous edging to veins between discoidal and second posterior, and second and third posterior cells; another, less-developed spot is at base of upper branch of cubital fork; sometimes there is a third, very faint spot at upper end of marginal cross-vein; praediscoidal spot small, greyish, triangular. Basal hook, black, sharp and curved; basal comb broad, deep black; veins black, second with a simple rounded dip at end; marginal cross-vein strongly recurrent, upper branch of cubital fork widely divergent from main stem at base; first posterior cell slightly narrowed at end, twice as broad as anal cell; second and third posterior cells of about equal width at end, vein between them being almost straight; middle cross-vein before middle of discoidal cell, which is rather

long and acute at end, vein between it and second posterior cell being slightly sinuous; third posterior cell at base falling considerably short of level of fourth; discoidal cell not dilated below at end; alula pale yellowish, with whitish fringe; axillary lobe long and broad.

232. *Exoprosopa (Exoprosopa) obtusa*, sp. nov.

Distinguished from the preceding species by the characters given in the table, and closely allied to *E. eluta*, Lw., from which it may be differentiated by the dark brown fore border to the wings being more clearly defined.

Type ♀, from the Transvaal, Sterkfontein (*H. P. Thomasset*); an additional specimen of same sex from N. Rhodesia, Feira, 7 April, 1911 (*F. V. Bruce-Miller*); numerous specimens, all ♀♀, from the Transvaal, Pretoria, March, 1914 (*Miss J. Brincker*); type ♂ and a ♀ from N.-W. Rhodesia, Chilanga, September, 1913 (*R. C. Wood*).

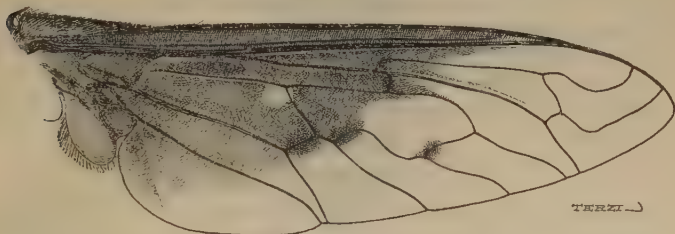


FIG. 29.—*Exoprosopa obtusa*, sp. nov. Wing of ♀. × 5.

The dark spot at the inner upper angle of the second posterior cell is sometimes less distinct than usual (perhaps in immature specimens); but the truncate ending to the fuscous area in the marginal cell, near the upper end of the submarginal cross-vein, is characteristic and sufficient to distinguish the present species from the closely allied *E. sigmoidea*, Bezzi. The ♂ is like the ♀, but has a narrower frons and black genitalia.

♂♀. Length of body 12–14 mm.; length of wing 13–15 mm.

Head and its appendages as in preceding species, but face distinctly red on sides, first antennal joint more or less reddish, third antennal joint more shortly conical, with style more than half its length; and proboscis more projecting. Thorax and scutellum as in preceding species, but pleurae clothed entirely with yellowish hair, even on metapleura; sternopleura, moreover, with yellowish tomentum; squamae yellowish, with whitish fringe; halteres yellowish. Abdomen as in preceding species, but band of whitish scales on third segment complete and broader; spines on ovipositor yellow. Legs as in preceding species, but front coxae clothed entirely with yellowish hair. Wings with proximal two-thirds of anterior half dark brown, and remainder

of surface quite hyaline; brown area has a truncate ending in marginal cell near end of marginal cross-vein, whence its inner margins follows a sharply defined course, to middle of anal and axillary cells; only other marking is a faint fuscous spot, filling inner basal angle of second posterior cell, but not extending into discoidal cell. Venation as in *E. infumata*, Bezzi. Alula infuscated, with whitish fringe.

233. *Exoprosopa* (*Exoprosopa*) *protuberans*, sp. nov.

This species again resembles the two preceding ones, but differs from them in the discoidal cell being dilated beneath before the end; it is furthermore distinguished from *E. eluta*, Lw., by the



FIG. 30.—*Exoprosopa protuberans*, sp. nov. ♂. $\times 2\frac{1}{2}$.

dark pattern on the wings being more extensive and more clearly defined.

Type ♀, from N.-W. Rhodesia, Chilanga, "on ground by stream," 12 September, 1913 (*R. C. Wood*); type ♂ and two ♀♀ from Nyasaland, Chinbemme, Mayumbe, November, 1912 (*J. G. Morgan*); an additional ♂ from Belgian Congo, Katanga District, 150-200 miles W. of Kambove, 3,500-4,500 ft., 16 October, 1907 (*Dr. S. A. Neave*).

The dark spot at the end of the discoidal cell is sometimes scarcely distinguishable, as in *E. eluta*, Lw., but the species can nevertheless always be known by the very characteristic shape of the discoidal cell.

♂♀. Length of body 13-15 mm.; length of wing 13-15 mm.

Head as in *E. infumata*, Bezzi, but sides of face, and sometimes even anterior half of frons, red; face sometimes even entirely

red; first antennal joint shorter and reddish; third antennal joint longer and linear, with short terminal style, less than half as long as joint itself; proboscis slightly projecting. Thorax and scutellum as in *E. infumata*, but postalar calli dark reddish and collar brighter yellow; pleurae with mainly black hair, sternopleura being devoid of yellow tomentum, but metapleural tuft being bright yellow, with a few black bristles below. Squamae blackish-brown, with whitish fringe; plumula white; halteres blackish, with paler knobs. Abdomen entirely black, and black scales; cross-bands of white scales more conspicuous than in two preceding species, and situate on base of second and middle of third, but also including whole of sixth and seventh segments; ♂ genitalia black; spines on ovipositor shining reddish. Venter deep black, second and third segments clothed entirely with white scales. Legs as in *E. infumata*, front coxae being likewise black-haired. Wing-pattern as in *E. infumata*, but much less dark; only fuscous spot is that in inner basal angle of second posterior cell, spots on base of upper branch of cubital fork and on marginal cross-vein being entirely wanting, but very faintly indicated. Venation as in *E. infumata*, but with very different discoidal cell, which is distinctly shorter and broader; vein between it and third posterior cell strongly S-shaped, so that discoidal cell bulges into third posterior cell.

Group 6. *E. dimidiata*.

The species of this group are distinguished by their dimidiate wing-pattern, *i.e.* they have a baso-anterior, sharply delimited dark brown or blackish fore border, which has a sharp or attenuated (not truncate) termination in the marginal cell, well before the marginal cross-vein; this baso-marginal pattern is not accompanied by fuscous isolated spots, either on the hind border, or at the apex. The shape of the discoidal cell is somewhat variable, its terminal vein being sometimes S-shaped, almost as in *Defliippia*, while sometimes the dilatation of its lower border before the end is about as marked as in some species of the *E. heros* group. The species are numerous and not easy to distinguish, as was stated long ago by Loew, who, however, knew but very few of the forms that belong to the present category.

234. *Exoprosopa* (*Exoprosopa*) *sigmoidea*, Bezzi (1912).

A species distinguished by its red first antennal joint, and by the discoidal cell being shaped much as in *Defliippia*.

Of this species, in addition to the type (a ♂ from W. Nyasa), the British Museum possesses a second ♂ from the Nyasaland Protectorate, 1909 (*Dr. S. K. Norris*), and numerous specimens, all ♂♂, from the Transvaal, Pretoria, February–March, 1914, and February, 1915 (*Miss J. Brincker*).

In my original description (*Trans. Ent. Soc. London*, 1912), the last word in line 18 on p. 641 should be *first*, instead of

"second." All hair on the pleurae even including the metapleura, as also that on the coxae, is golden yellow; the sternopleura is clothed with golden yellow tomentum.

235. *Exoprosopa* (*Exoprosopa*) *retracta*, sp. nov.

Closely allied to the preceding species and perhaps the ♀ sex of it, but distinguished by larger size and by the dark wing-pattern being narrower.

Type ♀, and an additional specimen of same sex, from Angola, Benguella, 1905 (*Dr. F. C. Wellman*).

♀. Length of body 14–15 mm.; length of wing 15–16 mm.

Head black, dull; occiput dark grey, with yellowish central fringe, and with whitish scales near eye-borders; postvertical furrow broadening behind; frons clothed with erect black hair, and with golden-yellow scales in front; face conically produced, clothed with yellowish scales and short black hair, latter forming a fringe on mouth borders, which are dark yellowish. Antennae with first joint long, red, black-haired; third joint black, shortly conical, with style of more than half its length. Palpi and proboscis black, latter somewhat projecting. Thorax black, dull, clothed on back with black hair, with yellowish hair in front of scutellum, and with yellowish tomentum; collar and a longitudinal stripe on each side of back yellowish; macrochaetae black; pleurae above and on metapleurae with yellowish hair, but centre of mesopleura and sternopleura black-haired. Scutellum dark red, with basal half black, clothed at base with black scales, on apical half with yellowish hair, and on hind border with black bristles. Squamae brownish, with whitish fringe; plumula white; halteres yellowish, with dark stalks. Abdomen broader than thorax, and blunt at end; tergites clothed with black scales, and segments from second to seventh each with complete but narrow band of white scales, situate at base on second segment, in middle on third and fourth segments, and posteriorly on fifth and sixth, while seventh segment is entirely white, with black fringe on hind border; long hair on sides white on first segment and on basal angles of second, black elsewhere, but on sides of third, fourth and fifth segments there are tufts of yellowish hair. Spines on ovipositor shining yellow; venter black, clothed with whitish scales on hind border of terminal segment, and with long, soft, golden yellow hair. Legs entirely black, front pair abbreviated, with fairly stout, smooth tibiae, and shortly pubescent tarsi; front coxae mainly black-haired; middle femora with one or two, hind femora with a complete row of spines; claws black, with long, pointed basal tooth. Wings long, with basal hook and basal comb black; inner, oblique margin of dark fore border beginning at end of first longitudinal vein, passing over bases of first submarginal, first posterior and discoidal cells, including outer extremity of second basal cell and less than proximal half of anal cell, and

ending in basal fourth of axillary cell; third and fourth posterior cells not infuscated at base, while in *E. sigmoidea*, Bezzi, latter of these cells at least is infuscated basally. Veins dark reddish, infuscated at apex; disposition of veins as in *E. sigmoidea*, but middle cross-vein situate on (not before!) middle of discoidal cell; alula yellowish, with white fringe; axillary lobe short and broad, at base with whitish fringe, which becomes darker before it ends.

236. *Exoprosopa* (*Exoprosopa*) *contorta*, sp. nov.

Very near *E. seniculus*, Wied., but without any trace of a dark band on the middle of the wing.

This species is described by me, from material from East Africa, in my as yet unpublished paper on the Bombyliidae of the Museum of Budapest; the British Museum possesses a ♂ from Kenya Colony, Mbuyuni, Serengetti Plains, 24 May, 1916 (*T. J. Anderson*).

237. *Exoprosopa* (*Exoprosopa*) *clausina*, sp. nov.

A species clearly characterised by certain details in the wing, namely by the marginal cell being infuscated almost to the marginal cross-vein, and the first posterior cell being closed and having a short stalk.

Type ♀, a solitary (damaged) specimen from Angola, Benguella, 1905 (*Dr. F. C. Wellman*).

♀. Length of body 11 mm.; length of wing 12 mm.

Head black; occiput with shining silvery scales in indentation in eye-border; face conically prominent, with scattered shining white and yellow scales, and black hair like frons. Antennae entirely black; first joint with black hairs; third joint very elongate, conical, ending in a short style. Palpi and proboscis black, latter projecting for length of labella. Thorax black, with yellowish collar, and with a stripe of yellowish hair on each side; macrochaetae black; pleurae black-haired, yellowish-haired above, metapleural tuft yellowish, sternopleura with yellowish tomentum. Scutellum entirely black, clothed with black scales and with some pale yellowish tomentum at end. Squamae brownish, with white fringe; plumula white; halteres black. Abdomen blunt at end, entirely black, clothed above with black scales, second segment with complete basal band of white scales, third with white scales on sides, fourth and fifth segments each with a more yellowish band, sixth and seventh entirely white; hair on sides white at base, black and with scattered black scales intermingled elsewhere; spines on ovipositor black; venter black, clothed with yellowish hair. Legs entirely black; front pair abbreviated, with smooth tibiae, and with tarsi beset with rather long, rigid hairs; front coxae mainly black-haired; claws black, with short basal tooth. Wings hyaline, with blackish fore border, inner margin of latter, running

from end of first vein to end of second basal cell, with three notches as in *E. scalaris*, Bezzi, one oblique a little before end of marginal cross-vein, one a little before middle cross-vein, and third at base of discoidal cell; anal cell with basal third infuscated, and axillary cell with only extreme base infuscated. Basal hook and small basal comb black. Veins black, second longitudinal vein originating before middle cross-vein, and with a broad and not very deep terminal dip; marginal cross-vein S-shaped, strongly recurrent at base, and nearly horizontal; first posterior cell closed at tip, and with a short stalk; discoidal cell narrow, only a little longer and not broader than second posterior cell, from which it is separated by a straight and almost perpendicular cross-vein; middle cross-vein on middle of discoidal cell; third posterior cell at base a long way short of level of fourth posterior cell; alula blackish, with dark fringe; axillary lobe long and narrow. Praediscoidal spot greyish, broad and subquadrate.

238. *Exoprosopa* (*Exoprosopa*) *angusta*, sp. nov.

A small species, apparently allied to the preceding, but distinguished by having different antennae, and by the first posterior cell being open.

Type ♂, and two additional specimens of same sex from S.-W. Madagascar, Betsileo, 1878.

♂. Length of body 8.5–9.5 mm.; length of wing 9–10 mm.

Head black; occiput dark grey dusted, with yellowish central fringe, a white band on eye-borders, and a narrow postvertical furrow; frons very narrow, only one-ninth of head at vertex, shining black and clothed with erect black hair posteriorly, dull and with pale yellowish scales on anterior half; face prominent but bluntly convex, sides below, jowls and mouth borders reddish-yellow, clothed with pale yellowish scales. Antennae entirely black; first joint short and with short black hairs; third joint more than twice as long as first two joints together, elongate conical with thick terminal style, a little less than half as long as joint itself. Palpi and proboscis black, latter with labella projecting. Thorax entirely black, with collar, lateral stripes and hair in front of scutellum yellow; macrochaetae black; pleurae clothed entirely with yellow hair, even on metapleura, and with yellow tomentum on sternopleura. Scutellum entirely black, shining, with yellow hair behind, and black bristles on hind border. Squamae quite white, and with white fringe; plumula white; halteres pale yellowish, with base of knobs infuscated. Abdomen almost equal to thorax in length and breadth, entirely black (but denudate in case of specimens under examination); first segment on sides with long, pale yellowish hair; sternites black-scaled, and apparently from second sternite onwards with transverse bands of yellowish scales, but without white scales; genitalia black; venter black,

with hind borders of segments narrowly reddish, clothed with yellowish hair and yellowish tomentum. Legs entirely black; front pair abbreviated with stout, smooth tibiae and with tarsi clothed with short hair; front coxae with yellowish hairs; spines very long, especially those on hind tibiae; hind femora beneath with four or five spines; claws with slender tooth. Wings with black, curved basal hook, and very small, black, basal comb; blackish-brown basomarginal fore border running from end of axillary vein to a little beyond end of second basal cell, filling more than half of anal cell, but leaving axillary cell almost hyaline; in marginal cell blackish-brown fore border ends obliquely at level of upper end of marginal cross-vein; more than half of first submarginal and discoidal cells infuscated. Remainder of wing greyish hyaline. Veins black; terminal dip in second longitudinal vein broad and not very deep; marginal cross-vein very oblique but nearly straight; first posterior cell greatly narrowed at end, narrower than anal cell; discoidal cell very narrow, with almost parallel sides, its terminal vein being straight but oblique; second and third posterior cells long, but third not reaching level of fourth at base; middle cross-vein considerably before middle of discoidal cell. Alula brownish with darkish fringe; axillary lobe narrow, almost devoid of basal fringe; praediscoidal spot scarcely distinguishable.

239. *Exoprosopa (Exoprosopa) dimidiata*, Macquart (1846).

This well-known species is at once distinguishable by the broad, blackish, basomarginal pattern on the wings, and by the silvery hair on the abdomen.

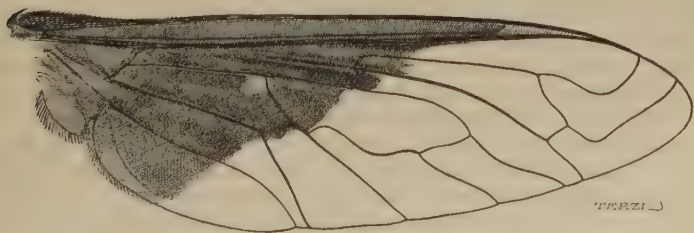


FIG. 31.—*Exoprosopa dimidiata*, Macq. Wing of ♀. $\times 5\frac{1}{2}$.

It is represented in the British Museum by:—a ♂ from Portuguese East Africa, R. Zambesi, Caia, 13 September, 1910 (*Dr. H. Swale*); a ♂ from Nyasaland, Mt. Mlanje, 16 November, 1912 (*Dr. S. A. Neave*); and a series of specimens from Kenya Colony, Mombasa, 12–13 February, 1912, and Uchweni Forest, 1–2 March, 1912 (*Dr. S. A. Neave*); and Uganda Protectorate, Semliki Plains, near S. shore of Lake Albert, 2,200 ft., 25–27 November, 1911, Mbale-Kumi Rd., 3,700 ft., S. of Lake Salisbury, 15–17 August, 1911 (*Dr. S. A. Neave*), and Katunguru, Kazing Channel,

near Lake Edward, 5 February, 1912 (*Dr. H. B. Owen*). All these specimens are more or less typical. A ♂ of larger size (about 15 mm. in length) from Kenya Colony, Makindu, 15 December, 1911 (*Dr. S. L. Hinde*), seems also to belong to this species, but has the basal black pattern on the wings extending almost to the end of the anal cell.

In the present species the frons is very narrow in both sexes, but is distinctly narrower in the ♂ than in the ♀.

240. *Exoprosopa* (*Exoprosopa*) *rubescens*, sp. nov.

Closely allied to the preceding species and probably only a variety of it, but differing in having a slightly different wing-pattern, and in the abdomen and legs being redder.

Type ♂ and type ♀ from Uganda: ♂, 1911 (*Dr. C. H. Marshall*); ♀ from Rumi River, 4,000 ft., 12 February, 1912 (*Dr. J. Fraser*); an additional ♀ from Kenya Colony (*R. J. Stordy*).

♂♀. Head as in preceding species, but face and jowls entirely reddish-yellow, even frons being broadly reddish near antennae; latter entirely black, with third joint about as long as terminal style; proboscis not at all projecting. Thorax as in *E. dimidiata*, Macq.; pleura even in ♂ with predominantly yellow hair; metapleural tuft entirely yellow. Abdomen broadly red on sides in both sexes, being in ♂ red, with broad, median, longitudinal black stripe; middle segments in ♂ clothed on sides (red area), with white scales, but shining silvery hair, as seen in preceding species, apparently quite wanting; ♂ genitalia reddish-brown; spines on ovipositor shining reddish; venter entirely red in both sexes, with whitish scales and pale yellowish hair. Legs as in *E. dimidiata*, Macq., with front pair abbreviated and having smooth tibiae and shortly pubescent tarsi; legs with tibiae and tips of femora distinctly reddish; legs also clothed with reddish-yellow scales; claws black, with thin, pointed tooth. Wing-pattern as in *E. dimidiata*, but dark area in marginal cell has its end truncate in both sexes, and nearer to upper extremity of marginal cross-vein; dark area also of greater extent, discoidal cell having only its apical half hyaline, and anal cell and axillary lobe having narrower hyaline ends. Vein reddish-brown (not black!), disposed as in *E. dimidiata*; middle cross-vein on middle of discoidal cell; praediscoidal spot broader and more distinct.

NOTE.—The present species may be confounded with *E. stannusi*, Bezzi (of the *E. punctulata* group), which, however, has white (not yellowish) hair on the pleurae, distinctly red legs with black knees, and in the wings has the anal cell and the axillary lobe always entirely hyaline.

241. *Exoprosopa* (*Exoprosopa*) *nigritella*, sp. nov.

A very distinct, entirely black species of smaller size, with the black wing-pattern in the ♂ much narrower than in the preceding species.

Type ♂, type ♀, and some additional specimens of same sex from Nyasaland, Mt. Mlanje, November–December, 1912 (*Dr. S. A. Neave*).

♂♀. Length of body 10–12 mm.; length of wing 10–13 mm.

Head black; occiput with yellowish central fringe, silvery orbital band, and short, deep postvertical furrow; eyes with only moderately deep indentation, but long bisecting line. Frons very narrow in ♂, at vertex only a little broader than oval and prominent ocellar tubercle, at level of antennae about one-fourth of width of head, nearly twice as broad in ♀; frons clothed with dense, erect, black hair, and with silvery scales on anterior portion; face black, moderately prominent, bluntly convex, with black hair in centre, with shining white scales, and with pale yellowish hair below and on mouth borders, which are yellowish. Antennae with first joint short and black-haired; third joint elongate conical, with style of equal length. Palpi and proboscis black, latter with labella projecting. Thorax entirely black, with black and yellow tomentum on back; collar and lateral stripes yellow; macrochaetae black; pleurae in ♂ with yellowish hair, that on pteropleura and metapleura whitish; propleura and mesopleura in ♀ clothed with black hair. Scutellum wholly black in ♂, dark reddish except at base in ♀, with shining black scales, and with black bristles on hind border. Squamae and halteres whitish; plumula quite white. Abdomen not broader but longer than thorax, with parallel sides and blunt at end, altogether black; hair on sides long and dense, in ♂ entirely white to fourth segment, and black on sides of fifth to seventh segments and accompanied by broad and long blackish scales; tergites clothed with shining black scales; third, fourth, sixth and seventh tergites have on each side a band of white scales, broadly interrupted in middle; genitalia black, spines on ovipositor reddish; venter deep black, on basal half clothed with silvery scales, and in ♂ with long white hair. Legs entirely black, but femora and tibiae in ♂ clothed with abundant white scales; front coxae with yellowish hair (front legs wanting in case of ♂); hind femora below with three or four spines; claws black, with short, pointed basal tooth. Wings hyaline, very iridescent, in ♂ with narrow basomarginal black fore border, inner margin of which runs obliquely from end of auxiliary vein, passing a little beyond middle cross-vein, to end of second basal cell, middle of anal cell and base of axillary lobe; in ♀, black fore border broader and shorter, much as in *E. dimidiata*, Macq.; praediscoidal spot greyish and broad; basal hook black; basal comb narrow, black. Veins black; terminal dip in second vein very flat in ♂, deeper in ♀; marginal cross-vein strongly recurrent, upper branch of cubital fork widely divergent from main stem at base; first posterior cell broadly open, twice as broad as anal cell; second, third and fourth posterior cells in ♂ of about equal breadth at end; vein between second and third posterior cells

moderately straight in ♂, more curved forwards at end in ♀; third posterior cell at base narrow in ♂, and not reaching level of base of fourth posterior cell in either sex; discoidal cell rather short and broad, its terminal vein short and straight, but oblique; middle cross-vein before middle of discoidal cell; alula brownish, with whitish fringe; axillary lobe short and broad.

242. *Exoprosopa* (*Exoprosopa*) *diluta*, sp. nov.

Closely allied to *E. eluta*, Loew, but differing in the sides of the abdomen being entirely clothed with yellowish hair, and in the wings not being at all infuscated at the end of the discoidal cell.

Type ♂, a solitary specimen from Kenya Colony, Moyale, 16 December, 1911 (*Dr. G. R. H. Chell*).

♂. Length of body 12 mm.; length of wing 12 mm.

Head black; occiput with yellowish fringe, whitish orbital band and deep postvertical furrow; frons moderately narrow, thrice as broad as dark brown, flat ocellar tubercle, with erect black hair, and with pale yellowish scales above antennae; face bluntly convex, moderately prominent, with pale yellowish scales, and with dense pale yellowish hair on mouth borders, but with tuft of black hair on upper mouth edge; jowls and mouth borders yellow. Antennae with first joint long, black, black-haired (third joint wanting in case of type). Palpi blackish-brown, with whitish hairs; proboscis black, projecting. Thorax black, dark grey dusted, with black and yellow tomentum on back, yellow tomentum more abundant in front of scutellum; collar and lateral stripes yellowish; macrochaetae black; pleurae grey dusted, clothed entirely with yellowish hairs. Scutellum dark reddish, black at base and on proximal two-thirds of each side, clothed with yellowish tomentum and with black bristles on hind border. Squamae pale yellowish, with whitish fringe; plumula yellowish; halteres yellowish with knobs infuscated beneath. Abdomen black, blunt at end; hair on sides entirely yellowish, even on hind border of last segment, but on last three segments there are some longer black hairs; tergites almost entirely clothed with yellowish tomentum, and with black scales, without trace of cross-bands of white scales; genitalia blackish-brown; venter black, grey dusted, with yellowish tomentum, and with long yellowish hair. Legs black, but femora densely clothed with yellowish scales; front pair legs much abbreviated, with yellow-haired coxae, smooth tibia, and very shortly pilose tarsi; hind femora with complete row of spines beneath; claws black, with pointed basal tooth. Wings hyaline, with yellowish-brown basomarginal fore border, inner margin of which is well defined, running obliquely from end of first vein to that of second basal cell, anal and axillary cells being infuscated only at base; centre of second basal cell paler; praediscoidal spot distinct; basal hook black; basal comb

short but broad, black, with yellowish tomentum. Veins reddish-brown, infuscated apically; second vein originating before middle cross-vein, and with terminal dip of moderate depth; marginal cross-vein not very oblique; upper branch of cubital fork widely divergent from main stem at base; first posterior cell at end more than twice as broad as anal cell; second and third posterior cells of about same width at end, vein between them slightly curved; third posterior cell rather broad, and not reaching level of fourth posterior cell at base; middle cross-vein before middle of discoidal cell, which is much broader before its end than at base, but vein between it and third posterior cell not bulging into latter; terminal vein of discoidal cell slightly S-shaped and oblique; axillary lobe very short and broad, only twice as long as broad; alula dark yellowish-brown, with whitish fringe.

243. *Exoprosopa* (*Exoprosopa*) *stenomelaena*, sp. nov.

A medium-sized species, with the end of the discoidal cell dilated and having an appendix, as in the case of *E. dilatata*, Bezzi, but with black antennae, entirely yellow metapleural tuft, and narrow, blackish-brown, basomarginal stripe on the wing.

Type ♂, a solitary specimen from Angola, Benguella, 1905 (*Dr. F. C. Wellman*).

♂. Length of body 13 mm.; length of wing 14 mm.

Head black; occiput with yellowish tomentum and whitish orbital band; postvertical furrow deep and narrow; frons at vertex thrice as broad as ocellar tubercle, with erect black hair, and with yellowish scales on anterior portion. Antennae entirely black, with first joint elongate and black-haired; third joint short and thin, not very broad at base, with style of more than half its length. Face conically prominent, with yellowish scales and black hair; jowls and mouth borders black; proboscis black, projecting further than length of antennae. Thorax black, with yellowish tomentum on back, yellow collar, and yellow lateral stripes; macrochaetae black; pleurae black-haired, but notopleural and metapleural tufts bright orange; sternopleura entirely black, without pale tomentum. Scutellum entirely black, yellowish tomentose, with black bristles on hind border. Squamae blackish, with whitish fringe; plumula whitish; halteres blackish. Abdomen slightly broader than thorax and truncate at end, entirely black, with yellow hair on sides of first segment, and black hair on remainder of lateral margins; abdomen clothed on back with black scales, and apparently also having bands of white scales (difficult to distinguish in case of type owing to denudation); genitalia black, and black-haired; venter black, with white scales on terminal segments, and with blackish hair. Legs entirely black; front

pair abbreviated, with smooth tibiae and shortly pilose tarsi; front coxae black-haired; claws black, with short, pointed tooth. Wings hyaline, with black basomarginal border narrow, its inner margin extending from end of first vein to end of second basal cell, anal and axillary cells being infuscated only at base; praediscoidal spot broad and rounded; third and fourth posterior cells entirely hyaline at base. Basal hook black; basal comb very small and narrow, deep black; veins for most part black, only first, third and fifth being reddish-brown. Apical dip in second longitudinal vein broad and flat; marginal cross-vein slightly S-shaped, and recurrent at base; upper branch of cubital fork widely divergent from main stem at base; first posterior cell not narrowed at end, only a little narrower than second; discoidal cell about thrice as broad before its end as at base, its lower vein being curved and bulging at distal extremity into third posterior cell, and its terminal vein slightly curved and somewhat oblique; middle cross-vein before middle of discoidal cell; second posterior cell much narrower than discoidal cell; third posterior cell at base not reaching level of fourth; vein dividing second from third posterior cell almost straight, and emitting a stump into discoidal cell; anal cell greatly narrowed distally; axillary lobe short and broad; alula blackish, with long whitish fringe.

244. *Exoprosopa (Exoprosopa) albofimbriata*, sp. nov.

An entirely black species, closely allied to *E. clausina*, Bezzi, but distinguished by the metapleural tuft being quite black, and by the fringe of the squamae being silvery white.

Type ♂, type ♀, and two additional specimens from Belgian Congo, Katanga District, Kambove, 4,500–5,000 ft., 25–28 March, 1907 (*Dr. S. A. Neave*).

The present species is reminiscent of *Defilippia lepidogastra*, Bezzi, the sides of the abdomen being similarly clothed with scales; it is noteworthy that *D. lepidogastra* itself has a constricted first posterior cell.

♂♀. Length of body 9–11 mm.; length of wing 10–12 mm.; wing-expanse 21–27 mm.

Head entirely black and black-haired, occipital fringe alone being yellowish; white scales present on eye-borders, chiefly near indentation; scales on frons and face black, and somewhat glistening; face bluntly conical. Antennae quite black, with first and second joints black-haired; third joint not much thickened at base, with long, thin styloform prolongation, bearing a rather thick and long terminal style. Proboscis black, rather long, projecting for a distance about equal to length of antennae. Thorax and scutellum quite black, and also black-scaled and black-haired, only collar and small notopleural tuft being reddish; bristles black; pleurae clothed entirely with black hair, among

which white plumula and broad silvery fringe on squamae are very noticeable. Halteres black. Abdomen elongate, with parallel sides and blunt at end; abdomen denuded in case of types, but all hair and scales apparently black, except tuft of reddish hair at base on sides of first segment, and bands of white scales on anterior half of second, and on sides of fourth, fifth and seventh segments; lateral margins of entire abdomen also fringed with long narrow black scales. Venter black, and clothed with black hair and scales; ♂ genitalia black; spines on ovipositor dark brown. Legs entirely black; front tibiae smooth; front tarsi with short pubescence; hind femora with complete row of spines below; hind tibiae with long stout, spicules; claws black, with pointed basal tooth. Wings rather broad and short, but narrow at base, alula being very small; basal hook and small basal comb black; second longitudinal vein originating before discal cross-vein, at a distance equal to length of cross-vein itself, its terminal dip double, long, and S-shaped; submarginal cross-vein long, recurrent and S-shaped; first posterior cell closed on or before wing-margin, in latter case with a short stalk, but sometimes narrowly open; discal cross-vein before middle of discoidal cell; latter narrow and elongate, its terminal cross-vein short, slightly though distinctly S-shaped; second posterior cell broad and rectangular; third posterior cell very long and narrow at base, which is only a little shorter than that of fourth. Axillary lobe long and narrow. Wings conspicuously dimidiate; basal half dark brown, infuscated area having a truncate ending in submarginal cell at upper extremity of submarginal cross-vein, and being prolonged as a narrow stripe to end of first longitudinal vein; inner margin of dark brown area running obliquely from upper end of submarginal cross-vein, over basal half of discoidal cell and extreme base of third and fourth posterior cells, to a little above middle of anal cell and middle of axillary lobe. Alula blackish, almost destitute of fringe.

Group 7. *E. punctulata*.

The spines of this group are very numerous, and characteristically Ethiopian. They may be recognised by the conical shape of the abdomen, by the colour of the body and legs being for the most part red and by the pleurae being clothed mainly with pale hair. The wings are likewise characteristic, both in pattern and venation. The pattern is very simple, consisting only in a more or less developed fuscous fore border; very rarely there are isolated dark spots in the posterior half, or abbreviated dark transverse bands across the middle. The discoidal cell is bounded distally by a short, straight cross-vein; but the latter being oblique, the upper external angle of the discoidal cell is rather acute. Some species are very stoutly built, while others have a *Villa*-like appearance.

245. *Exoprosopa* (*Exoprosopa*) *punctulata*, Macquart (1840).

A medium-sized species, readily recognisable owing to its dark spotted wings and spinulose front tibiae.

E. punctulata, which seems to be distributed throughout the Ethiopian Region, was described by Loew, in 1860, under the name *E. rasa*. The data with reference to the specimens of this species in the British Museum are: Abyssinia, November, 1911 (*R. J. Sturdy*); Kenya Colony (*same collector*), and Makindu, 16 December, 1911 (*Dr. S. L. Hinde*); and Tanganyika Territory, Tanga, 10 August, 1917 (*Dr. W. A. Lamborn*).

246. *Exoprosopa* (*Exoprosopa*) *perpulchra*, sp. nov.

A beautiful species with banded wings, closely allied to *E. tricolor*, Macquart, but distinguished by having a somewhat different wing-pattern.

Type ♂ and type ♀ from Nyasaland Protectorate, 1909 (*Dr. S. K. Norris*); a further series of specimens, likewise from Nyasaland, Mt. Mlanje, November–December, 1912, and January–February, 1914 (*Dr. S. A. Neave*); and two examples from N.-W. Rhodesia, Nega Nega, 3,200 ft., "on grass in open glade in forest," 29 November, 1913 (*R. C. Wood*). It would therefore seem that the present species belongs to Central and Eastern Africa, while *E. tricolor* is West African.

♂♀. Length of body 12–14 mm.; length of wing 12–14 mm.

Head black; occiput clothed with golden-yellow tomentum which becomes pale yellowish on postocular band; postvertical furrow narrow; central fringe yellowish. Eyes with indentation not very deep, but with long bisecting line. Frons of about equal breadth in both sexes, near vertex thrice as broad as oval ocellar tubercle, densely clothed with erect black hair, and with golden scale, which become very dense on anterior half. Face conically prominent, densely clothed with golden scales, with black hair on upper mouth edge, and with whitish hair on sides and jowls. Antennae entirely black; first joint short and black-haired; third joint shortly conical, slightly longer than first two joints together, with style of a little more than half its length. Palpi blackish, yellowish-haired; proboscis black, not or very little projecting. Thorax elongate, black, on the back with black hair and golden tomentum; macrochaetae black; hair in collar and on sides golden yellow; pleurae grey dusted, with wholly yellowish hair, even on metapleura; sternopleura not clothed with scales. Scutellum dark reddish, black at base, and with median basal patch of black scales, golden tomentose elsewhere, with long, scattered black hairs above, and with black bristles on hind border. Squamae yellowish, semi-transparent, with yellowish fringe; halteres pale yellowish; plumula yellow. Abdomen elongate conical, black, broadly red on sides, at least in ♂; hair on sides long, yellowish as far as third segment, then

black; tergites with black median area clothed with black scales, and red lateral borders clothed with golden scales, which are paler in ♀ and form six broad golden cross-bands, interrupted in middle; last segment with black posterior fringe; venter reddish in ♂, blackish in ♀, clothed with whitish or greyish scales, and with long whitish hair; ♂ genitalia reddish, yellow-haired; spines on ovipositor shining reddish. Legs entirely black, with dense whitish or yellowish scales; front pair not much abbreviated, with smooth tibiae and shortly pubescent tarsi; front coxae with yellowish hairs; middle femora with three or four, hind femora with complete row of spines; claws black, with short, slender basal tooth. Wings hyaline, with base and costal cell yellowish, and with two broad blackish-brown or blackish cross-bands in middle. First of these bands running from praefurca to apical half of axillary lobe; second extending from stigma to distal border of third posterior cell, without reaching hind margin; these two bands united together above in marginal and first submarginal cells, and separated by

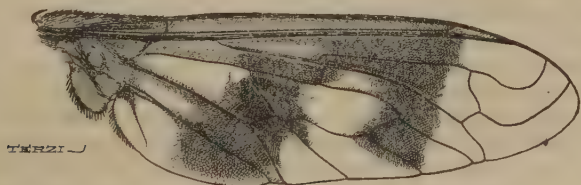


FIG. 32.—*Exoprosopa perpulchra*, sp. nov. Wing of ♀. × 6.

hyaline indentation occupying middle of discoidal cell, and extending to distal extremities of third and fourth posterior cells; second basal cell with proximal half hyaline or semi-hyaline, like anal cell and axillary lobe. Basal hook black; basal comb well developed, black, but clothed with golden tomentum; veins black, except first, third and fifth, which are reddish-yellow; alula yellowish hyaline, with pale yellowish fringe. Terminal dip in second longitudinal vein of moderate depth; marginal cross-vein with slight double curve, and recurrent; first posterior cell little narrowed at end; second posterior cell long and narrow, with parallel sides; third posterior cell nearly twice as broad as second at end, and at base not reaching level of fourth posterior cell. Discoidal cell rather short, narrower than second basal cell, and not broader at end than at base, its terminal vein being short and straight, as well as oblique; middle cross-vein before middle of discoidal cell; anal cell rather widely open; axillary lobe somewhat narrow.

247. *Exoprosopa* (*Exoprosopa*) *triplex*, sp. nov.

Closely allied to the foregoing species, but distinguished by having reddish legs and being of much larger size.

Type ♀ and an additional specimen of the same sex from Belgian Congo, Katanga District, 150–200 miles W. of Kambove, 3,500–4,500 ft., 30 September, 1907 (*Dr. S. A. Neave*).

♀. Length of body 16 mm.; length of wing 18 mm.; wing-expanse 42 mm.

Head black, with reddish face; occiput with yellowish central fringe, and yellowish, partly whitish, postocular band; frons clothed with erect black hair, anterior half more or less broadly reddish, and clothed with yellowish scales; antennae with first and second joints reddish and clothed with black hair, first joint rather short (third joint wanting in case of type and paratype); face entirely reddish, moderately prominent, clothed with yellowish scales, with whitish hair on sides, and with small, median, black tuft on upper border of mouth; proboscis black, not projecting. Thorax black, with short black hair on back and with yellowish scales; collar entirely yellowish; bristles black; no black hair on pleurae; metapleural tuft whitish. Scutellum reddish except at base, clothed with yellowish scales, and with black bristles on hind border. Squamae reddish, with pale yellowish fringe; halteres with whitish knobs and dark reddish stalks. Abdomen black, with second to sixth segments red on sides, and seventh segment red, with median, black basal spot; hind borders of second to sixth tergites likewise red; sides of dorsum with yellowish hair at base, clothed elsewhere for most part with black hair, and last segment with black fringe; yellowish scales apparently predominating on back. Venter entirely reddish, clothed with pale yellowish hair; spines on ovipositor reddish. Legs reddish, with tarsi and tips of femora black; femora densely clothed with yellowish scales; front tibiae smooth; hind femora below with complete row of spines; hind tibiae with strong spicules; all spines and spicules black; claws black, reddish at base, with strong basal tooth. Venation and wing-pattern as in foregoing species, but dark bands having a less solid appearance owing to inclusion of partially clear spaces in certain cells, and proximal band not, or only to a limited degree, extending beyond anal cell.

248. *Exoprosopa* (*Exoprosopa*) *tricolor*, Macquart (1840).

Closely allied to the preceding species, but distinguished by being of smaller size, by the cross-bands on the wings being paler and more abbreviated, and by the base of the first posterior cell being completely infuscated.

After being described originally from a specimen from Senegal, *E. tricolor* does not appear to have been recorded subsequently; the British Museum possesses numerous specimens of both sexes from various localities in N. Nigeria, July, 1912 (*Dr. J. W. Scott Macfie*), in addition to two others from N. Territories, Gold Coast, Yapi, July, 1914 (*Dr. J. J. Simpson*).

Length of body 15–17 mm.; length of wing 15–17 mm.

Head as in preceding species, but scales on frons and face more yellow than golden, and moreover face almost entirely reddish; third antennal joint more elongate, about twice as long as first two joints together, with terminal style of much less than half its length. Thorax and scutellum as in preceding, but hair in collar and on sides paler yellow, that on pleurae being even whitish. Abdomen and legs as in *E. triplex*, but with scales and tomentum distinctly paler. Wings with base more broadly yellow; second basal cell infuscated only at its distal extremity, and anal cell and axillary lobe almost completely hyaline, thus proximal dark band not reaching hind margin of wing; dark cross-bands moreover fuscous, not blackish, with less sharply defined edges; bands also more abbreviated behind, though base of first posterior cell is infuscated. Veins more broadly yellowish at base; axillary lobe shorter and broader.

249. *Exoprosopa (Exoprosopa) tricolor orientalis*, subsp. nov.

In the British Museum there is a ♀ specimen of *E. tricolor*, Macq., from Kenya Colony, Uchweni Forest, near Witu, 25-27 February, 1912 (*Dr. S. A. Neave*), which differs from the specimens referred to above in having a darker wing-pattern, the base of the wings being blackish instead of yellowish; moreover, the abdomen is more broadly black; and the notopleural and metapleural tufts are bright red, not pale yellowish. The typical form being exclusively West African, this eastern form may provisionally be distinguished as a subspecies, under the name given above.

250. *Exoprosopa (Exoprosopa) robertii*, Macquart (1840).

Closely allied to the two preceding species, but without distinct cross-bands on the wings.

Of *E. robertii*, Macq., which has not been recorded again since it was originally described from a ♂ obtained in Senegal, there are in the British Museum numerous specimens of both sexes from various localities in N. Nigeria, May, 1912 (*Dr. J. W. Scott Macfie*), as well as a ♀ from Gold Coast, N. Territories, Suripe, May, 1913 (*Dr. J. J. Simpson*).

Length of body 12-16 mm.; length of wing 12-16 mm.

Frons in ♀ only a little broader than that of ♂; third antennal joint very elongate, with short terminal style; antennae entirely black, with first joint black-haired; face conical, moderately produced, dark reddish, densely clothed with whitish scales; proboscis not projecting. Thorax black, grey dusted, with reddish postalar calli, black bristles, and yellow hair in collar and on sides; pleurae pale yellowish-haired, with whitish hair beneath. Halteres yellow; squamae reddish, with whitish fringe; plumula white. Abdomen red, with black, median longitudinal stripe, which in ♂ is much narrower than in ♀, and is often broken up into spots by hind margins of segments being red; last two

tergites entirely red, seventh tergite with black posterior fringe; ♂ genitalia red, yellow-haired; spines on ovipositor shining reddish; venter entirely reddish, with whitish scales and hair, sternites in ♀ blackish-grey at base. Front legs not much abbreviated, with smooth tibiae and shortly pubescent tarsi; claws black, with reddish base and with pointed basal tooth. Wings yellowish at base and in costal cells; fuscous patch darker in middle of marginal cell, and at base of first submarginal and first posterior cells; discoidal cell hyaline, with basal and apical veins narrowly infuscated; second basal cell hyaline, with only its terminal vein narrowly infuscated; apex and hind border dusky hyaline. Basal hook black; basal comb yellowish tomentose; veins yellowish at base, infuscated apically and disposed as in two preceding species.

251. *Exoprosopa* (*Exoprosopa*) *nova*, Ricardo (1901).

Closely allied to the preceding species, but at once distinguished by the dark bands on the wings being more sharply defined and by the sexual dimorphism in the wing-pattern; although the banding of the wings in the ♂ is of an abnormal character, the second basal cell being hyaline on the proximal side of the brown area is characteristic of the present group.

In addition to the ♂ and ♀ types, from Nyasaland and Delagoa Bay respectively, the British Museum possesses numerous specimens of both sexes from the Nyasaland Protectorate, Fort Johnston, 1,500 ft., January, 1906 (*E. L. Rhoades*), and January, 1910 (*H. N. Tate*). There is, moreover, a ♀ from Portuguese E. Africa, Lorenzo Marques, Inyak Island, January, 1907 (*F. D. McMillan*).

252. *Exoprosopa* (*Exoprosopa*) *gentilis*, sp. nov.

A small and pretty species, differing markedly from all the other known members of the present group, owing to its yellow macrochaetae and the peculiar coloration of the body and wings.

Type ♂, a solitary specimen from the Nyasaland Protectorate, S. Nyasa, Nkudzi, 5 May, 1908 (the late *Captain Hallam Hardy*, *R.A.M.C.*).

♂. Length of body 11 mm.; length of wing 10 mm.

Head black; occiput densely clothed above with dark yellow scales, and on sides and below with white scales; postvertical furrow little developed, flat; eyes with rather broad but not deep indentation, and with short bisecting line. Frons one-fifth of head at vertex, and one-third near antennae, with rather more than posterior half clothed with yellow scales and short black hair, and with white scales and white hair elsewhere; ocellar tubercle small, shining black, rounded; face very prominent, conical, pointed and *retroussé*, black, with yellow and almost bare lower border, elsewhere, like jowls, densely clothed with white scales; antennae black; first joint short, white

tomentose and with short white hairs; third joint elongate conical, with terminal half thin and styliform, ending in a thin style which is apparently bisected, with basal half yellowish and apical half whitish. Palpi yellowish, white pilose; proboscis thin, black, somewhat projecting. Thorax black, on back densely clothed with yellow scales; collar in middle with yellow, on sides and below with white hair; on each side of back a complete longitudinal stripe of perfectly white hair; all macrochaetae dark yellowish. Pleurae black, grey dusted, densely clothed with white hair, and with white scales on sternopleura; metapleural tuft entirely white; squamae pale yellowish, with white fringe; halteres whitish-yellow; plumula white. Scutellum dark red with black base, clothed in centre with yellow, on sides with white scales, its terminal bristles yellow. Abdomen conical but rather depressed and blunt at end, reddish, with first segment broadly black and with short, median longitudinal black stripe, ending on proximal half of fourth segment; dorsum without any pattern, entirely clothed with yellow scales of uniform type; sides at base densely clothed with longish and whitish hair, and with shorter, pale yellowish hair elsewhere; last segment with pale yellowish fringe on hind border; genitalia reddish; venter reddish-yellow, with white scales and white hair. Legs black, but tibiae and tarsi broadly yellowish at base, and femora with abundant white and yellowish scales; front legs not distinctly abbreviated, with smooth tibiae and long, thin, shortly pubescent tarsi; front coxae with dense white hairs; spines black; middle femora with one or two, hind femora with three or four spines; claws black, with short but pointed basal tooth. Wings on proximal two-thirds with yellowish tinge, which becomes more fuscous in middle, and leaves only apex and part of hind border hyaline; cross-veins a little more infuscated; praediscoidal spot whitish. Basal hook, and narrow basal comb reddish, latter having short black bristles on fore border; veins reddish-yellow, infuscated apically. Second vein with deep dip at end; marginal cross-vein recurrent at base, S-shaped; upper branch of cubital fork widely divergent from main stem at base; first posterior cell of irregular shape, much broader in middle than at end, vein dividing it from second posterior cell having a double curve, and bending first backwards, and then forwards; second posterior cell as broad as third at end; third posterior cell rather truncate at base, and not reaching level of fourth. Discoidal cell contracted before middle, and vein separating it from third posterior cell emitting at this point a short, backwardly directed stump; discoidal cell dilated before its end, but vein dividing it from second posterior cell rather short, straight and oblique; middle cross-vein long, situate on or slightly before middle of discoidal cell. Anal cell greatly narrowed at end; axillary lobe rather short and broad; alula yellowish-fuscous, with long whitish fringe.

253. *Exoprosopa* (*Exoprosopa*) *melanaspis*, sp. nov.

A smallish, black, yellow-scaled and yellow-haired species, with a conspicuous, blackish-brown, basomarginal area on the wing:

Type ♂, type ♀, and an additional specimen from N.-W. Madagascar, Majunga Province, Andranolava, 13 November, 1907 (*J. J. Lloyd*).

In wing-markings, the present and the five following species resemble those of the *E. dimidiata* group; in view of their general shape and facies, however, it seems better to place them in the present group.

♂♀. Length of body 9–11 mm.; length of wing 10–12 mm.

Head deep black; occiput with yellowish central fringe, and narrow, silvery, postocular border; postvertical furrow narrow, but bilobate behind; eyes with long bisecting line and indentation of little depth. Frons narrow, in ♂ only a little broader than ocellar tubercle, in ♀ about twice as broad, densely clothed with short, erect black hair, and with golden scales on anterior half; face conical, moderately prominent, with narrowly yellow mouth borders, with yellow scales, and with dense yellowish hair on sides below. Antennae black; first joint short and black-haired (third joint wanting in case of types). Palpi dirty blackish, with long pale hairs; proboscis black, not projecting. Thorax rather short, entirely black, with black hair on disc, and yellow hair on sides and in front of scutellum; collar entirely yellow; macrochaetae black; pleurae clothed entirely with yellow hair, which is paler on metapleura and sternopleura. Scutellum entirely black, with yellow pubescence, and with black bristles on hind border. Squamae brownish with whitish fringe; halteres dark yellowish, with knobs blackened at base. Abdomen conical, entirely black, or in ♂ sometimes with a red spot on each side of second and third segments; dorsum of abdomen clothed in middle with black scales, on sides and posteriorly with yellowish ones; hair on sides pale yellowish or whitish, only last three segments having black hair, which is more developed in ♀; posterior, fringe on last segment yellow in ♂, black in ♀; ♂ genitalia black; ovipositor with shining reddish spines; venter black in ♂, with more or less broad red hind borders to segments, densely clothed with yellow or whitish scales, and with long pale hair. Legs entirely black; front pair not much abbreviated, with smooth tibiae, having only a few very thin but long hairs on outer side, and with tarsi clothed with rather long pubescence; front coxae with yellowish or whitish hair; femora with yellow scales, those of middle legs with one or two, those of hind pair with a complete row of spines; claws black, with blunt and not very distinct basal tooth. Wings infuscated, but with apex beyond marginal cross-vein, and hind border hyaline, and with infuscation becoming fainter before its end. Basal hook and basal comb black; veins black. Second longitudinal

vein with a deep dip at end; marginal cross-vein recurrent; first posterior cell much narrowed at end, its distal extremity about as broad as anal cell at end, or sometimes a little broader; second posterior cell as broad as third at end, base of third posterior cell falling considerably short of that of fourth; discoidal cell long and narrow, with parallel sides, its terminal vein short and straight, but oblique, and middle cross-vein being situate considerably before its middle. Axillary lobe wholly hyaline, and not very broad; alula subhyaline, with black border and long yellowish fringe.

254. *Exoprosopa (Exoprosopa) nigrispina*, sp. nov.

Closely allied to the preceding species, but distinguished by having the face, scutellum and legs reddish.

Type ♀ and an additional specimen of same sex from N.-W. Madagascar, Majunga Province, Andranolava, 13-17 November, 1907 (*J. J. Lloyd*).

♀. Length of body 12-13 mm.; length of wing 12-13 mm.

Head as in preceding species, but face entirely reddish, and mouth borders yellowish; third antennal joint black like remaining joints, very shortly conical, a little longer than first two joints together, with styliform terminal part and thin terminal style, only a little shorter than joint itself. Thorax and scutellum as in foregoing species, except that scutellum is dark reddish, with its base narrowly black. Abdomen entirely black, shaped and clothed as in preceding species; spines on ovipositor long, faintly curved and deep black; sternites greyish-black, with reddish hind borders, and clothed with pale yellowish scales and hair. Legs reddish, with coxae, tips of front tibiae and larger part of tarsi black; front legs as in preceding species, but with tibiae quite bare; spines black; claws black, with reddish base and short, blunt tooth. Wings as in foregoing species, but infuscation a little narrower, discoidal and anal cells being almost entirely hyaline, though first posterior cell is infuscated almost to end; venation as in preceding species, but first posterior cell more widely open; basal comb black, but densely clothed with yellowish tomentum.

255. *Exoprosopa (Exoprosopa) nigrina*, sp. nov.

A small, black, yellow-haired and yellow-scaled species, differing from the two preceding species in venation, and from the three following ones in the wings being black at the base.

Type ♀, a solitary specimen from N.-W. Rhodesia, Kasempa District, 3,500-4,500 ft., 1908-1909 (*E. A. Copeman*).

♀. Length of body 9 mm.; length of wing 9 mm.

Head deep black, mouth borders only being narrowly yellowish; occiput with pale yellowish central fringe, and with white post-ocular band; frons with erect black hair and with white scales in front; face bluntly convex, with whitish scales, and with black

hair anteriorly in middle, and yellowish hair on sides below. Antennae entirely black; first joint short and black-haired; third joint shortly conical, not very attenuated at end, a little longer than first two joints together, with terminal style of about half its length. Proboscis black, not projecting; palpi dark brownish. Thorax black, with yellow tomentum, and with yellow hair in collar and on sides; macrochaetae black; pleurae black, grey dusted, with yellow hair, even on metapleura. Scutellum black, somewhat dark reddish at tip, with black and yellow scales, and with black bristles on hind border. Squamae pale yellowish, with white fringe; halteres dark yellowish, with whitish knobs. Legs entirely black (front pair wanting in case of type); coxae yellow-haired; claws black, with sharp basal tooth. Wings rather dark greyish hyaline, with fuscous, fore border and fuscous base, infuscated area not well defined, and not extending beyond end of auxiliary vein, or fourth longitudinal vein; discoidal and second basal cells almost entirely hyaline. Basal hook and basal comb black; veins black, second longitudinal vein with only a very slight dip at end; marginal cross-vein S-shaped and oblique; first posterior cell not greatly narrowed at end, twice or more as broad as anal cell; second, third and fourth posterior cells of about equal breadth at end, third blunt at base, and not reaching level of base of fourth posterior cell; discoidal cell long, but less narrow than in last two species, and more irregular in shape, being constricted, below middle cross-vein and broadening slightly before end; its terminal vein somewhat S-shaped and oblique, but short; middle cross-vein before middle of discoidal cell; alula faintly infuscated, with whitish fringe; axillary lobe elongate.

256. *Exoprosopa* (*Exoprosopa*) *parvula*, Bezzi (1921—nom. nov. for *E. parva*, Ricardo, 1901, *nec* Lw., 1869).

Easily recognisable by the wings having a yellowish base, and by the legs being red.

This species, the types of which were obtained in the Transvaal, was originally placed by its author in the *E. dimidiata* group, but owing to its facies and venation really belongs here. In addition to the types, the British Museum possesses several specimens from Natal, including a ♂ from Willow Grange, Mooi River, 10 December, 1913 (the late *R. C. Wroughton*), and other examples from Heavitree, near Estcourt, February, 1913 (*D. Dibben*).

In the present species the frons in the ♂ is very narrow at the vertex, being only a little broader than the elongate ocellar tubercle.

257. *Exoprosopa* (*Exoprosopa*) *punctifrons*, sp. nov.

Closely allied to the preceding species, but differing in the legs being for the most part black, and in the presence of a very

distinctive reddish, median, rounded spot on the frons of the ♀.

Type ♂, type ♀, and some additional specimens from N. Nigeria, Shonga and Konkofu, March–April, 1912 (*Dr. J. W. Scott Macfie*). A ♀ from the Nyasaland Protectorate, N. Nyasa, Wovwi Stream, 28 November, 1909 (*Dr. J. B. Davey*), although lacking the red frontal spot, and having almost completely hyaline wings, also seems to belong here.

♂♀. Length of body 10–13 mm.; length of wing 9–12 mm.

Head black, but face broadly reddish below; occiput with whitish postocular band; frons in ♂ at vertex about twice, that in ♀ thrice as broad as elongate ocellar tubercle, clothed with erect black hair and with pale yellowish scales in front; frons moreover adorned in ♀ with a small bright orange-red, rounded spot near middle, more visible when upper surface of head is denuded; face bluntly convex, with pale yellowish scales and hair. Antennae black; first joint short and black-haired; third joint conical, much attenuated at end, and ending in a thin style of a little more than half its length. Proboscis black, not projecting; palpi blackish. Thorax black, with dark reddish postalar calli, and clothed on back with black hair, with yellow tomentum in front of scutellum; hair on sides and in collar entirely yellow; macrochaetae black; pleurae with pale yellowish hair, that on metapleura whitish. Scutellum red, with narrowly black base, clothed with yellowish hair, and with black bristles on hind border. Squamae pale yellowish, with white fringe; plumula white; halteres with whitish knobs. Abdomen black, more or less broadly red on sides of second to fourth segments; tergites clothed with black, yellowish and whitish scales, latter limited to sides; hair on sides white, but black and sparse on last three segments; last segment with posterior fringe of blackish scales; ♂ genitalia black; spines on ovipositor shining reddish; venter mainly reddish in ♂ and black in ♀, with red hind borders to segments and red base, clothed with pale yellowish scales and white hair. Legs black, but femora dark red beneath; front legs not very abbreviated, with smooth tibiae and shortly pubescent tarsi; front coxae yellow-haired; claws black, with pointed basal tooth. Wings hyaline, with yellowish base and infuscated fore border, infuscation not being sharply defined, and not or only slightly extending beyond fourth longitudinal vein, base of discoidal cell and second basal cell being very faintly infuscated; basal hook black; basal comb with reddish tomentum. Veins reddish-yellow, blackish at tips; second vein with very slight dip at end; marginal cross-vein not very recurrent; first posterior cell not greatly narrowed at end, second and third posterior cells of about equal width at distal extremity, and base of third posterior cell not reaching level of that of fourth; discoidal cell elongate, as broad at base as at end, and regular in shape, its terminal vein short, oblique and slightly S-shaped;

middle cross-vein before middle of discoidal cell; axillary lobe short and broad; alula subhyaline, with whitish fringe.

258. *Exoprosopa* (*Exoprosopa*) *palustris*, sp. nov.

Closely allied to the preceding species, but distinguishable by the base of the antennae being red, by the more heavily infuscated wings and by the absence of the frontal spot in the ♀.

Type ♀ and an additional specimen of the same sex from Uganda, S. of Lake Kioje, in swamp (*Dr. R. Fyffe*); two other ♀♀ respectively from Uganda, Kiseiga R., Toja, between Fort Portal and Mboga, 22 February, 1912 (*Dr. H. B. Owen*), and Nyasaland, Zomba, 3,000 ft., 20 November, 1911.

♀. Length of body 13 mm.; length of wing 12 mm.

Head as in preceding species, but frons in middle with a shallow fovea not differently coloured from surrounding area, and face conically produced and entirely reddish; first antennal joint red, clothed with black hair; third antennal joint elongate conical, not very attenuated at end (style wanting in case of type). Thorax and scutellum as in preceding; abdomen likewise similar, but more broadly red, even venter being entirely red. Legs as in preceding species, but with entirely reddish femora and with tibiae in part dark reddish. Wings as in foregoing, but more deeply infuscated, and with basal half of discoidal cell and whole of second basal cell included within infuscated area; venation as in preceding species, but middle cross-vein distinctly beyond middle of discoidal cell.

259. *Exoprosopa* (*Exoprosopa*) *stannusi*, Bezzi (1912).

Evidently allied to the three preceding species, but at once distinguished by its larger size, and by the narrower and more sharply defined wing-marking, as also by the characteristic coloration of the legs.

In addition to the typical series of this species from W. Nyasa, the British Museum possesses specimens of both sexes from Kenya Colony, Uchweni Forest, near Witu, 25-27 February, 1912 (*Dr. S. A. Neave*); Belgian Congo, Katanga District, 150-200 miles W. of Kambove, 3,500-4,500 ft., 6-7 October, 1907 (*Dr. S. A. Neave*); N.-W. Rhodesia, Chilanga, 4,000 ft., 5-12 November, 1913 (*F. V. Bruce-Miller*); S. Rhodesia, Buluwayo, "caught round tree," 9 October, 1910 (*E. C. Chubb*); and Natal, Umfuli R., October, 1895 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*).

The as yet undescribed ♀ is very like the ♂; the spines on the ovipositor are reddish. In my original description (*Trans. Ent. Soc. London*, 1912, p. 647) the scutellum is stated to be black, although it is actually red; the length may amount to 18 mm.

260. *Exoprosopa (Exoprosopa) capnoptera*, Bezzi (1912).

Near the preceding species, but distinguishable by its darker general coloration, by the golden colour of the hair, by the blackish halteres, and by the clearer part of the wings being not hyaline but distinctly infuscated.

In addition to the type, which is from W. Nyasa, there are in the British Museum some specimens of both sexes from Uganda, Entebbe, 18–20 November, 1912 (*C. C. Gowdey*); a further example from the same locality, 4,000 ft., 7–21 March, 1912 (*Capt. J. Fraser*); and a ♂ from Belgian Congo, Katanga District, Kabinda, 1914 (*Dr. J. Schwetz*).

Face more conically produced, along the notopleural line there are numerous black, bristly hairs; the hair on the middle of the pleurae is in part black, but the metapleural tuft is golden yellow.

The as yet undescribed ♂ resembles the ♀, but has the frons a little narrower; genitalia dark red, with a golden fringe.

261. *Exoprosopa (Exoprosopa) fuscula*, sp. nov.

A small, black species near *E. nigrina*, Bezzi, *E. parvula*, Bezzi, *E. punctifrons*, Bezzi, and *E. palustris*, Bezzi, but distinguishable by the posterior part of the wings being distinctly infuscated.

Type ♀, a solitary specimen from the Gambia, Barrendering, 23 April, 1911 (*Dr. J. J. Simpson*).

♀. Length of body 11 mm.; length of wing 11 mm.

Head black; occiput with white postocular band; frons in centre with a distinct fovea, which is neither yellowish nor reddish; frons clothed with black hair, and with pale yellowish scales in front; face bluntly convex, with whitish scales and whitish hairs beneath; proboscis black, somewhat projecting. Antennae entirely black; first joint short and black-haired; third joint elongate conical, with short terminal style. Thorax black, with pale yellowish hair on sides and in collar; metapleural hair very long and entirely yellowish; collar black on each side beneath; macrochaetae black; pleurae with black hair in middle; metapleural tuft entirely whitish. Scutellum red, narrowly black at base and there clothed with black scales, elsewhere with yellowish scales and with black bristles on hind border. Squamae whitish, with whitish fringe; plumula white; halteres yellowish, with white knobs. Abdomen black, rather shining, with a red spot on each side of third segment; abdomen denuded in case of type but tergites apparently clothed with pale yellowish and black scales; abdomen on sides with long whitish hair at base, but nearly bare elsewhere, or only with very short black hair, spines on ovipositor reddish-yellow; venter black, with whitish hair and scales. Legs entirely black, front pair rather short, with smooth tibiae and shortly pubescent

tarsi; front coxae with black hair; femora with black scales, middle pair with one, hind pair with four or five spines; claws black, with very short basal tooth. Wings with a basomarginal infuscation, not yellow at base, and distinctly fuscous on entire posterior portion. Veins black, disposed as in *E. punctifrons*, Bezzi, middle cross-vein on or just before middle of discoidal cell; basal hook and basal comb black; alula fuscous, with whitish fringe.

262. *Exoprosopa* (*Exoprosopa*) *aurulans*, sp. nov.

A medium-sized species of elongate shape, evidently allied to the preceding ones, but distinguishable by the wings being only yellowish at the base and on the fore border.

Type ♂ (without a head), type ♀, and two other examples from N. Territories, Gold Coast, Mankuma, 12-14 May, 1913 (*Dr. J. J. Simpson*); a ♀ from Nyasaland, 3,000 ft., November, 1912 (*J. G. Morgan*), seems also to belong here.

♂♀. Length of body 13-14 mm.; length of wing 13-14 mm.

Head black, but face and fore part of frons reddish; occiput grey dusted, with whitish postocular band, and very narrow postvertical furrow; frons in ♀ rather broad and short, at vertex more than thrice as broad as oval and not very prominent ocellar tubercle, clothed with black hair and pale yellowish scales on black part, and with pale yellowish hair and scales on red portion; face conically produced, with yellowish scales, and with sparse black hair in middle and on upper mouth edge, and with yellowish hair on sides below. Antennae entirely black; first joint short and black-haired; third joint elongate, linear rather than conical in shape, twice as long as the first two joints together, with very short and stout terminal style; proboscis black, with projecting labella; palpi black, pale-haired. Thorax elongate, black, dark grey dusted, with black hair and with yellow tomentum on disc; collar yellow; lateral stripes pale yellowish; macrochaetae black; pleurae grey dusted, clothed with pale yellowish hair, which becomes whitish on propleura and metapleura. Scutellum red, with black base, clothed with pale yellowish tomentum, and with black bristles on hind border. Squamae reddish-brown, with yellowish fringe; plumula white; halteres dark yellowish, with whitish knobs. Abdomen conical, red in ♂, with first segment and a narrow longitudinal median stripe black, stripe ending on fourth or fifth segment, and often reduced to a series of median basal spots; abdomen in ♀ black, with red hind borders to segments, and with a transversely elongated red spot on sides of second to fifth segments; dorsum clothed with black and pale yellowish scales, latter apparently forming broad transverse bands on all segments; hair on sides whitish, long and dense at base, short and sparse elsewhere, with a tuft of black hair on each side near posterior angles of second and following segments; ♂ genitalia

red, with golden hair; fringe on hind margin of last segment yellowish; spines on ovipositor reddish, venter entirely reddish-yellow in both sexes, clothed with pale yellowish scales and hair. Legs entirely black, front pair abbreviated, with smooth tibiae and shortly pubescent tarsi; front coxae with yellowish hair; femora with whitish scales, those of middle and of hind legs with complete rows of spines; tibiae with numerous, long spicules; claws black, with long, pointed basal tooth. Wings hyaline, yellow at base and in costal cells, fore border of fourth longitudinal vein very faintly infuscated, like middle and basal cross-veins; basal hook and basal comb black, latter pale yellowish tomentose. Veins reddish-yellow, infuscated apically; second longitudinal vein with broad, but not very deep terminal loop; marginal cross-vein slightly curved and not markedly retreating; first posterior cell practically not at all narrowed at end; second posterior cell narrow, much narrower than discoidal, and at end narrower than third posterior cell; latter at base not reaching level of fourth posterior cell; discoidal cell distinctly broader before end than at base, its terminal vein short and oblique almost straight; middle cross-vein before middle of discoidal cell; axillary lobe rather short and broad; alula yellow, with pale yellowish fringe.

263. *Exoprosopa (Exoprosopa) albata*, sp. nov.

A very well-differentiated species differing from all its known congeners in having six complete bands of white scales on the abdomen.

Type ♂ (without a head), type ♀, and four additional specimens from Portuguese East Africa, Lorenzo Marques, Inyak and Shefine Islands, and Comati River, January–February, 1907 (*F. D. McMillan*).

The present species is very closely allied to *E. nova*, Ric., but is at once distinguishable by the broad band of white scales on each abdominal segment except the first, and moreover by the absence of a discoidal dark spot in the wing of the ♀.

Four ♂♂ from Portuguese East Africa, Bengaline I., Incanine and Mavota, December, 1906–February, 1907 (*same collector as above*) show the proximal dark band on the wings as in *E. nova*, Ricardo. I propose to distinguish them as a new variety under the name *E. albata novaeformis*, var. nov.

♂♀. Length of body 14–15 mm.; length of wing 14–15 mm.

Head black, face yellowish, frons with median, red, ovate spot; occiput with white shining postocular band; frons at vertex more than thrice as broad as ocellar tubercle, with a reddish-brown dust in centre and in front with erect black hair on posterior three-fourths, and with pale yellowish scales in front; face conical, but not very prominent, reddish dusted, pale yellowish scaled, with whitish hair below on sides and with median tuft of short black hair on upper edge of mouth. Antennae

entirely black; first joint rather long and black-haired; third joint shortly conical, about as long as first two joints together, with terminal style of approximately same length. Proboscis black, not at all projecting; palpi black, pale-haired. Thorax black, on back with black hair and yellowish tomentum; collar and notopleural hair rather bright yellow; lateral stripes pale yellowish; macrochaetae black; pleurae grey dusted, with pale yellowish hair; mesopleura above in middle with some black hairs; metapleura with yellow hair. Scutellum red, narrowly black and black-scaled at base, with yellowish tomentum elsewhere, and with black bristles on hind border. Squamae reddish brown, with yellowish fringe; plumula yellow; halteres blackish, with knobs pale yellowish above. Abdomen conical, red on sides and behind, clothed above with black and with white scales, latter forming six broad complete cross-bands on segments from second to seventh; hair on sides long and white on first and second segments, short and alternating whitish and black elsewhere; last segment with posterior fringe of black hair; ♂ genitalia red, clothed with black hair; spines on ovipositor black; venter black, clothed with dense white scales and with white hair, ground-colour not being visible. Legs entirely black, but femora dense clothed at base with yellowish scales; front legs shortened, with smooth tibiae and shortly pilose tarsi; front coxae with whitish hair; middle femora with four or five, hind femora with numerous spines; claws black, with long, pointed basal tooth. Wings hyaline, faintly yellowish at base and in costal cells, slightly infuscated in middle of fore border as far as fourth longitudinal vein, with distal cross-vein of second basal cell, and basal cross-vein of discoidal cell margined with fuscous. Basal hook and basal comb black, latter yellowish tomentose at base. Veins reddish, their distal portions blackish; second longitudinal vein with shallow terminal dip; marginal cross-vein S-shaped and recurrent; first posterior cell narrowed at end, but twice as broad as anal cell, second posterior cell narrow, much narrower than third at end; third posterior cell not reaching level of fourth posterior cell at base; discoidal cell of rather irregular shape, much contracted before middle and broadened before distal extremity, its lower vein bulging into third posterior cell, and its terminal vein short, nearly straight and oblique; middle cross-vein on middle of discoidal cell; axillary lobe broad but not very short; alula yellowish-fuscous, with long dark fringe.

264. *Exoprosopa* (*Exoprosopa*) *major*, Ricardo (1901).

A robust species with nearly hyaline wings, and characterised by the predominantly black coloration of the abdomen, antennae and legs.

As yet *E. major* has been met with only in Nyasaland; in addition to the type from Fort Johnston, the British Museum

series includes specimens from Mt. Mlanje, December, 1912 (*Dr. S. A. Neave*); two ♀♀ taken in 1909 (*Dr. S. K. Norris*) have the cross-veins at the base of the third and fourth posterior cells broadly infuscated.

265. *Exoprosopa* (*Exoprosopa*) *conochila*, sp. nov.

Closely allied to the following species, but distinguishable by having a very prominent conical face.

Type ♂, a solitary badly preserved specimen from the Anglo-Egyptian Sudan, Lado District, Yei, 23 February, 1911 (*H. H. King*).

The present and the four following species represent a group of nearly related forms, which are not easy to distinguish, and to which also belong *E. merope*, Wiedemann (1824), and perhaps *E. costalis*, Macquart (1846).

♂. Length of body 15 mm.; length of wing 16 mm.

Head black, with face and anterior portion of frons reddish, mouth borders being yellowish; occiput black, with narrow reddish postocular band, probably clothed with pale yellowish scales; frons at vertex twice as broad as elongate, reddish ocellar tubercle, clothed with short, erect black hairs on shining black part, and with yellowish scales on anterior half; face very conical, almost horizontally produced, with yellowish scales, with a tuft of black hair on upper mouth edge, and with yellow hair on sides below. Antennae with first joint dark red and clothed with black hair; second and third joints blackish, third joint shortly conical, about as long as first two joints together, with terminal style of equal length. Palpi and proboscis black, latter not projecting. Thorax broad, subquadrate, black, broadly reddish on postalar calli and in front of scutellum, clothed on back with reddish tomentum, which appears to form three longitudinal stripes on disc; hair in collar and notopleural tuft yellow, that on sides short and reddish; macrochaetae black; pleurae entirely clothed with reddish-yellow hair, even on metapleura, that on sternopleura being paler. Scutellum red, clothed with reddish tomentum, with black bristles on hind border. Squamae reddish-brown, with yellow fringe; plumula reddish; halteres dark yellow. Abdomen short, broadly conical, entirely red, with base of first segment black, and with a triangular black spot in centre of second and third segments, forming an abbreviated median stripe; dorsum apparently clothed with black and whitish scales; hair on sides long and whitish at base, very short and mainly pale yellowish elsewhere; last segment with yellow fringe; genitalia red, clothed with yellow hair; venter entirely reddish yellow, clothed with pale yellowish hair and scales. Legs and coxae reddish yellow, with knees and tarsi black; front coxae with yellow hair; femora and tibiae with pale yellowish scales; front legs abbreviated, with smooth tibiae and shortly pilose tarsi; spines black; claws black, with

red base and pointed tooth. Wings hyaline, vitreous, with faint narrow infuscation at base and along fore border; basal hook black; basal comb red, with black bristles. Veins yellow, infuscated towards tips; terminal dip in second longitudinal vein broad and shallow, marginal cross-vein S-shaped and recurrent; first posterior cell not greatly narrowed at end, second and third posterior cells of about same breadth at distal extremity, third posterior cell not reaching level of fourth posterior cell at base, middle cross-vein on middle of discoidal cell, which is rather narrow, with its terminal vein short, straight and oblique; axillary lobe short and broad; alula subhyaline with yellowish fringe.

266. *Exoprosopa* (*Exoprosopa*) *decolor*, sp. nov.

A species of large size, nearly allied to *E. batrachoides*, Bezzi, but differing in having isabella-coloured wings, which are not really infuscated on the fore border, and have the terminal cross-veins of the discoidal cell shaped and situated as in the subgenus *Defilippia*.

Type ♂, type ♀, one additional ♂ and two other ♀♀ from Belgian Congo, Katanga District, 150–200 miles W. of Kambove, 3,500–4,500 ft., 23 September, 1907 (*Dr. S. A. Neave*).

♂♀. Length of body 15–16 mm.; length of wing 16–17 mm.; wing-expanse 37–39 mm.

Head reddish, with blackish postvertical spot and blackish ocellar tubercle; central fringe yellowish; postocular band whitish; frons in ♂ twice, in ♀ thrice as broad as ocellar tubercle, clothed with black hair which is dense towards centre, thus forming a kind of transverse band, and with whitish scales on anterior portion; face rounded, moderately prominent, with whitish scales and hair; antennae reddish, third joint partly black, first joint twice or thrice as long as second, and clothed with black hair, third joint conical, as long as first two joints together, with very short and thick terminal style; proboscis blackish, only slightly projecting; palpi blackish, dark-haired. Thorax black on back, reddish on lateral margins and on pleurae, clothed on back with short black hair and yellowish scales; collar and notopleural tufts yellowish; bristles black; pleurae with pale yellowish or whitish hair, without any intermixture of black hairs. Scutellum entirely reddish, clothed like back of mesonotum, and with black bristles on hind border. Squamae reddish, with yellowish fringe; halteres reddish. Abdomen reddish, with first segment and a median basal spot on each segment from second to fifth black, spots successively decreasing in size, that on second segment largest, and sometimes extending to sides as a cross-band; hair on sides whitish at base, pale yellowish elsewhere, with small black tufts on sides of third to sixth segments, terminal segment fringed with black hair; venter pale reddish, unspotted, clothed with whitish scales and

pale hair; ♂ genitalia red, with fulvous hair; spines on ovipositor dark brownish or black. Legs red, only last four tarsal joints black; legs with pale yellowish scales and black spines, a complete row of latter on under side of hind femora; claws black, with red base, and short but pointed tooth. Wings suffused with an isabella-coloured tinge, only base and costal cells being ochraceous or brownish-ochraceous, but not really infuscated; all veins more or less ochraceous, distal portions of second and following veins brownish; basal hook and basal comb reddish, latter with yellowish scales; second longitudinal vein usually originating before discal cross-vein and with broad but not deep dip at end; first posterior cell narrowed at distal extremity; discoidal cell acute outwardly, with terminal vein horizontal, S-shaped and long; discal cross-vein before middle of discoidal cell; second posterior cell short and half as broad as third at end; third and fourth posterior cells rather short; anal cell at end only a little narrower than first posterior cell; axillary lobe short and broad, subhyaline; alula rounded, reddish-yellow, with whitish fringe.

267. *Exoprosopa (Exoprosopa) batrachoides*, Bezzi (1912).

A stoutly-built species not like *E. major*, Ric., but distinguished by the ground-colour of the abdomen, the legs and the base of the antennae being red.



FIG. 33.—*Exoprosopa batrachoides*, Bezzi. Wing of ♂. × 5.

In addition to the type, which is from N. Nyasa, the British Museum possesses further material from the Nyasaland Protectorate, including: two ♀♀ from Mt. Mlanje, 18-21 November, 1912 (*Dr. S. A. Neave*); and a ♀ from Ruw District, Muona, October, 1912 (*Dr. J. E. S. Old*); also a doubtful ♀ from Natal, Umfuli R., October, 1915 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*).

268. *Exoprosopa (Exoprosopa) latifrons*, sp. nov.

Allied to the preceding species, but differing in being of smaller size, and in having a less conical abdomen, and a broader fuscous fore border to the wings.

Type ♀ and two additional specimens of same sex from N.

Nigeria, Jebba and Konkofu, 31 March–3 April, 1912 (*Dr. J. W. Scott Macfie*); a fourth ♀ specimen from the Gambia, Ballangar, 13 March, 1911 (*Dr. J. J. Simpson*).

♀. Length of body 15–16 mm.; length of wing 15–16 mm.

Head black, with reddish face and pale yellowish mouth borders, occiput black, with reddish postocular borders, which are clothed with pale yellowish scales; central fringe pale yellowish; post-vertical furrow narrow, but broadened behind, lower than vertex. Frons at vertex thrice as broad as ocellar tubercle, therefore much broader than in *E. villaeformis*, Bezzi, and of same breadth as in *E. batrachoides*, Bezzi; frons clothed with short, erect, black hair, and with yellowish scales in front; face bluntly convex, fairly prominent, with pale yellowish scales and yellowish hair, devoid of black tuft on anterior angle. Antennae almost entirely reddish, third joint being only slightly darkened and blackish at tip and above; first joint with yellowish hairs, and with a few black ones above; third joint elongate conical, longer than first two joints together, with terminal style of half its length and black. Palpi dirty yellowish, infuscated at base, with pale hairs; proboscis black, not or very little projecting. Thorax black, with reddish postalar calli, and with pubescence, collar, and notopleural and lateral hair yellow; macrochaetae black; pleurae grey dusted, with pale yellowish hair, that on sterno- and metapleura more whitish. Scutellum entirely red, with yellowish pubescence, and with black bristles on hind border. Squamae reddish-brown, with white fringe; plumula white; halteres brownish, with knobs whitish above. Abdomen conical, red, with black longitudinal median stripe, formed by a series of black spots resting respectively on bases of second, third and fourth segments, and separated by red hind borders of latter; first segment black, with a red hind border; hair on sides entirely pale, long and whitish near base, short and pale yellowish elsewhere; last segment with yellow posterior fringe; tergites apparently clothed with yellowish scales; spines on ovipositor shining reddish; venter wholly reddish, with whitish scales and hair. Legs and coxae reddish, with bases of femora darkened, dark tibiae and black tarsi; front legs not much abbreviated, with smooth tibiae and shortly pubescent tarsi, front coxae with yellow hairs; femora with whitish scales and black spines, middle femora with two or three, those of hind legs with a complete row of spines; claws black, narrowly reddish at base, with long, pointed tooth. Wings greyish hyaline, yellowish at base and in costal cells, faintly infuscated proximally and in middle as far as fifth longitudinal vein, fuscous area occupying both basal cells and basal half of discoidal cell; terminal cross-vein of discoidal cell faintly edged with fuscous; basal hook black; basal comb reddish, with black bristles. Veins reddish, infuscated distally; terminal dip in second longitudinal vein broad and not very deep; marginal cross-vein S-shaped and

strongly recurrent; first posterior cell narrowed at end, but broader than anal cell, second and third posterior cells of about same breadth at distal extremity, base of third posterior cell not reaching level of that of fourth; middle cross-vein on middle of discoidal cell, which is elongate and about as broad at base as at end, its terminal vein being slightly S-shaped and oblique; axillary lobe short and broad; alula yellowish, with whitish fringe.

269. *Exoprosopa (Exoprosopa) villaeformis*, Bezzi (1912).

Differing markedly from allied species owing to the shape of the abdomen, which is broader and blunt at the end, and the shape of the third antennal joint, which is more like that found in the genus *Villa*; differing further in the narrowness of the frons, and in the spines on the ovipositor in the ♀ being black.

In addition to the type, from N. Nyasa, the British Museum possesses a number of other specimens of this species, including a series of examples from various localities in Nyasaland (*Drs. J. B. Davey*; *H. S. Stannus*; *J. E. S. Old*); two ♂♂ and two ♀♀ from N. Nigeria, Kurumi near Konko, and Konkofu, 31 March, 1912 (*Dr. J. W. Scott Macfie*); one ♀, Kenya Colony, between Mombasa and Lake Victoria, 1893 (*F. J. Scott Elliot*); one ♂, one ♀, Belgian Congo, Katanga District, 150-200 miles W. of Kambove, 3,500-4,500 ft., 23 September-7 October, 1907 (*Dr. S. A. Neave*); and a ♂, Natal, Umfuli R., November, 1895 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*).

A ♀ specimen from N. Nigeria (*Dr. J. W. Scott Macfie*) shows a very curious anomaly in venation, the fourth longitudinal vein being interrupted at the discal cross-vein, and its severed distal portion united obliquely with the third longitudinal vein by means of a cross-vein, the discoidal cell thus being confluent with the basal part of the first posterior cell. The condition described occurs in both wings.

The occurrence of the species in N. Nigeria suggests that *E. villaeformis*, Bezzi, may be synonymous with *E. (Anthrax) merope*, Wied., the type of which was obtained in "Guinea."

In the present species the frons is very narrow in the ♂, being at the vertex almost narrower than the small, reddish ocellar tubercle; in the ♀ it is distinctly broader, but is still much narrower than in the allied species; the position of the vein between the second basal and the discoidal cells is more perpendicular than in *E. batrachoides*, Bezzi, and allied species, but less so than in the following species.

270. *Exoprosopa (Exoprosopa) pallida*, sp. nov.

A robust, pale coloured species, distinguishable at once from all those already dealt with owing to the yellow colour of its postalar and scutellar macrochaetae, and the elongate wings, which have the discoidal cell markedly truncate at base.

Type ♂, four additional specimens of the same sex and one ♀, from the Nyasaland Protectorate, Kaswiras, December, 1910 (*H. N. Tate*).

♂. Length of body 15–17 mm.; length of wing 18–20 mm.

Head, including whole of occiput, entirely reddish; occiput with whitish central fringe and less conspicuous whitish postocular band; occipital furrow deep and narrow, and darker than surrounding area; eyes with shallow indentation but long bisecting line. Frons narrow, but broader than in *E. villaeformis*, Bezzi, twice as broad as small, rounded ocellar tubercle, occupying near antennae only one-third of head, clothed with erect dark yellowish hair, with cross-band of blackish hair towards middle, and with yellowish scales in front; face rounded, moderately prominent, with yellowish scales and short yellowish hair, which becomes white on pale yellowish jowls; no tuft of black hair on upper mouth edge. Antennae with first and second joints pale reddish, first somewhat elongate and clothed with pale yellowish hair; third joint dark brown, shortly conical, shorter than first two joints together, with thin dark yellowish style, longer than joint itself. Palpi yellow, pale-haired; proboscis black, not or very little projecting. Thorax very broad and flat, black, red on sides and with broad, subquadrate red spot in front of scutellum; thorax clothed with dense dark yellowish pubescence; hair in collar and notopleural tufts mainly yellow, and much shorter than in allied species; a stripe of whitish hair on each side above base of wing; macrochaetae rather short especially praesutural ones which are three in number and black, while postalar macrochaetae are yellowish; pleurae reddish, grey on upper half, with yellowish hair, which becomes paler below; metapleural tuft entirely yellow. Scutellum entirely reddish, with yellowish pubescence, and with dark yellowish bristles on hind border. Squamae reddish, with pale yellowish fringe; plumula dense and pale yellowish; halteres dark yellow, with paler knobs. Abdomen reddish, broad and rather flat, but pointed at tip, first segment black with red hind border, second and third segments each with median black spot at base, that on third being much smaller, sometimes also a small black dot at base of fourth segment; dorsum entirely clothed with narrow, pale yellowish scales, which at base of second and third segments are more whitish, thus forming somewhat indistinct cross-bands; hair on sides short, dense and yellowish, on first segment, very short and whitish elsewhere; last segment with short pale yellowish fringe on hind border; genitalia dark reddish, pale-haired, with some black hairs below; venter entirely reddish, with whitish scales and hair. Legs and coxae reddish, only last two or three tarsal joints blackish; front legs abbreviated, tibiae with three or four black spicules on outer side, and tarsi shortly pubescent; front coxae with dense pale yellowish hair; femora with whitish scales and black spines; tibiae with dense but

rather short spicules; claws black, with pointed basal tooth. Wings hyaline, vitreous, rather narrow and long; extreme base, costal and subcostal cells yellowish-fuscous, coloured fore border extending only a little beyond first longitudinal vein; cross-veins not at all infuscated. Basal hook reddish-brown; basal comb reddish, with black bristles and dense whitish tomentum. Veins entirely reddish-yellow; marginal cell narrow and pointed at tip, terminal dip in second longitudinal vein being very slightly developed; marginal cross-vein not very much curved; upper branch of cubital fork widely divergent from main stem at base; first posterior cell short and very widely open, twice as broad at end as at base; second posterior cell short, more or less rhomboidal and much narrower than third at end; third posterior cell as broad as fourth at end, and not reaching level of latter cell at base; anal cell narrowly open. Discoidal cell markedly truncate at base, vein dividing it from second, basal cell being almost perpendicular; base of discoidal cell narrower than second basal cell, and its distal extremity pointed; discoidal cell narrower before end than at base, its terminal veins being straight and oblique; middle cross-vein a little before middle of discoidal cell. Axillary lobe very short and broad, only a little longer than broad; alula yellowish-fuscous, with dark fringe.

Group 8. *E. aegina*.

This group is not easy to distinguish from the last. The species composing it, however, are somewhat peculiar in shape, due to the abdomen not being conical; they are also pale in colour, and have mostly yellow macrochaetae and lightish wings, which sometimes show an extensive dark pattern. The first posterior cell has a tendency to be closed, and even stalked.

As stated above, the species of the present group are almost exclusively Mediterraneo-Caspian, and for the most part arenicolous and desert-haunting. I have, however, seen *E. aegina*, Wied. (syn. *E. ferruginea*, Klug) from Erythraea (Assab), and the collection before me includes the following species.

271. *Exoprosopa* (*Exoprosopa*) *suavipennis*, Macquart (1849).

A robust, thickset species, very near *E. tephroleuca*, Loew, but with a different coloration and a closed first posterior cell.

The type was obtained in the Cape Verde Islands, and although the species was subsequently recorded by Becker from Egypt, I am inclined to think that the German author was mistaken. In my catalogue it is treated as a variety of *E. algira*, with which, however, it has nothing to do. It is very closely allied to *E. tephroleuca*, Loew, which is probably only a form of *E. suavipennis*.

The British Museum possesses some specimens from the Gambia, Kerewan, 6 March, 1911, and Illiassa, 10 March, 1911 (*Dr. J. J. Simpson*).

These individuals, which agree very well with Macquart's short description and figure, enable me to amplify the author's statements as follows :—

Length of body 16–17 mm.; length of wing 16–17 mm.

Head densely clothed with yellowish scales, even on occiput and upper part of frons; frons rather broad at vertex, occupying one half of head; face convex, not conical, without black hairs. Antennae black, first joint with pale hairs, and with some black ones above; third joint elongate conical, with short terminal style; proboscis black, not projecting. Thorax broad and flat, with dense yellowish tomentum apparently forming three broad longitudinal stripes; collar entirely yellowish; whitish lateral stripes distinct; macrochaetae pale yellowish; pleurae clothed entirely with pale, whitish hairs, even on metapleura. Scutellum red, with yellowish tomentum, and with pale yellowish bristles on hind border. Squamae and halteres whitish-yellow. Abdomen rather flat, broad and blunt at tip, reddish, with a more or less broad median basal black stripe; second and third tergites each with a broad posterior band of black scales, dorsum elsewhere clothed with yellowish scales, which are more whitish on base of second and third tergites, thus forming two broad, complete cross-bands; hair on sides entirely whitish or pale yellowish, even in posterior fringe on last segment; spines on ovipositor pale yellow; venter reddish, clothed with white scales and hair. Legs red, with whitish scales, tips of hind tibiae and tarsi blackened; front legs abbreviated, with smooth tibiae and shortly pilose tarsi; femora with very short, inconspicuous black spines; spicules on tibiae short, hind tibiae on outer side with short, black fringe of uniform length; claws black, with yellow base and pointed tooth. Wings as in Macquart's figure; basal hook yellowish; basal comb reddish, with black bristles and pale yellowish tomentum; axillary lobe short and broad; alula yellowish, with darkish fringe. Form of discoidal cell recalling that in subgenus *Defilippia*, its terminal vein being long, S-shaped and nearly horizontal; middle cross-vein considerably before middle of discoidal cell; second longitudinal vein without dip at end.

NOTE.—*E. tephroleuca*, Loew (1856), seems to differ only in having black femora and a somewhat different abdominal pattern, the hind borders of the second and of third segments being devoid of black scales.

Group 9. *E. balioptera*.

This exclusively Ethiopian group consists of a small number of species, which in colour and venation agree with the following group, but are distinguished by the well-marked and very distinct black spots on the cross-veins and bifurcations.

272. *Exoprosopa* (*Exoprosopa*) *poeciloptera*, sp. nov.

A species of relatively large size, distinguishable at once by its front tibiae being clothed with spicules, and by its extremely variegated wings.

Type ♂, a solitary specimen from Nyasaland, Mlanje, 4 April, 1913 (*Dr. S. A. Neave*).

♂. Length of body 15 mm.; length of wing 15 mm.

Head black, rather shining; occiput with pale yellowish central fringe, and narrow, whitish postocular band; postvertical furrow narrow, separated from vertex by a deep depression. Eyes with flat indentation and short bisecting line. Frons at vertex thrice as broad as short, dark brown ocellar tubercle, with a somewhat indistinct, broad, dark reddish spot in middle, and another more distinct one in front, and between antennae; frons clothed with erect black hair, and in front with very sparse, small yellowish scales. Face convex, rounded, moderately

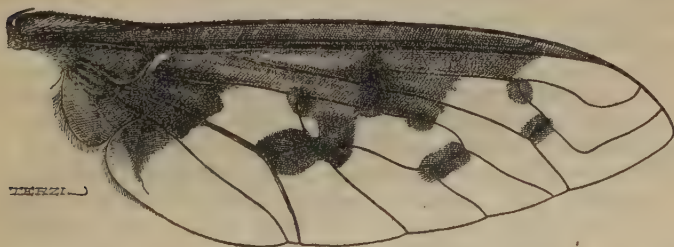


FIG. 34.—*Exoprosopa poeciloptera*, sp. nov. Wing of ♂. $\times 6$.

prominent, clothed with very sparse yellowish scales, and with entirely black hair, even on sides below; mouth borders narrowly yellowish. Antennae black; first joint dark reddish and clothed with black hair; third joint elongate conical, with narrow base, a little longer than first two joints together, with thin terminal style of about its own length. Proboscis black, with projecting labella; palpi black. Thorax entirely black, clothed on back with dark yellowish-red tomentum and erect black hair; collar bright yellow above, black on sides and below; notopleural hair black, but above base of wings there is a narrow stripe of short, reddish hair; macrochaetae black; pleurae brownish dusted, clothed entirely with deep black hair, even on metapleura; sternopleura without scales. Scutellum dark red, with black base clothed with black scales, while elsewhere there is yellowish tomentum; hind border with numerous black bristles. Squamae brownish, with yellowish fringe; plumula quite white; halteres blackish, with yellowish stalks. Abdomen broad, but attenuate behind even if not actually conical; abdomen black, with dark reddish spots on sides of second, third and fourth segments, and

clothed above with black scales; on base of second, and on sides of fourth segment there are narrow stripes of yellowish scales; second segment on each side with broad patch of long, white, scaly hair, which viewed from in front appears shining silvery; third segment with basal band of white scales; fifth, sixth and seventh segments each with a broad band of white scales, interrupted in middle; hair on sides white and shining on first, and on anterior part of second segment, black and short elsewhere; hind border of seventh segment with black fringe; ♂ genitalia black; venter dark reddish, with yellowish scales and mainly black hair. Legs and coxae black, but ground-colour of femora, at least below, apparently dark reddish, though concealed beneath dense, deep black scales; front legs much abbreviated, with short, stout tibiae, beset with numerous black spicules on outer side, and with tarsi clothed above with rather long, erect, rigid hairs; front coxae entirely clothed with black hair; middle femora with a single spine, hind femora with seven or eight spines; tibiae with long spicules; claws black, with long, pointed basal tooth. Wings quite hyaline, with sharply defined black and yellowish pattern; black area extending from base to middle of second posterior cell, basal third of anal cell and basal fourth of axillary lobe, latter being subhyaline along hind border; black area just described in contact with a brown fore border, not extending beyond fourth longitudinal vein below, and at distal extremity occupying bases of the first posterior and first submarginal cells, marginal cell to marginal cross-vein, and entire costal and subcostal cells; this dark border distinctly yellowish towards middle, in its broadest part. Wings with dark spots as follows:—one at base of second longitudinal vein, and one on anterior cross-vein, both included in fuscous fore border, but always distinct because they are much darker; a broad rounded spot near base of discoidal cell, united above with fuscous fore border, and below filling extreme base of third posterior cell; in contact with this spot is another broad blackish spot on lower terminal cross-vein of second basal cell; on elongate blackish spot surrounding whole of terminal cross-vein of discoidal cell; discoidal cell moreover exhibiting two other smaller spots in contact with fuscous fore border, one in extreme upper basal angle, and one in middle of third section of fourth longitudinal vein; a subquadrate spot surrounding entire basal portion of upper branch of cubital fork; and a rounded blackish spot at upper end of marginal cross-vein, in contact with distal extremity of dark fore border. Basal hook black, curved; basal comb deep black, reddish tomentose at base. Veins black, dark reddish towards fore border and base; terminal dip in second vein broad, marginal cell being dilated at end; marginal cross-vein S-shaped and recurrent; upper branch of cubital fork widely divergent from main stem at base, and bent twice at right angles; first posterior cell not much narrowed at end, twice and more as broad

as anal cell; second posterior cell rather long, about as broad as third at end; third posterior cell at base a little shorter than fourth posterior cell; discoidal cell not very elongate, constricted beyond base, but not expanded before end; middle cross-vein a little before middle of discoidal cell; terminal cross-vein of discoidal cell straight, short and almost perpendicular. Axillary lobe short and broad; alula blackish, with broad, dark fringe.

273. *Exoprosopa (Exoprosopa) balioptera*, Loew (1860).

A black, medium-sized species, with smooth front tibiae, and with some black spots on the wings.

E. balioptera, which was originally described from ♀♀ from the Cape of Good Hope and Caffraria, seems to be not uncommon in South Africa. The British Museum possesses a ♀ from the Transvaal, Barberton, 1911 (*Dr. P. Rendall*) and a second ♀ from Natal, Malvern, 1904 (*J. P. Cregoe*).

274. *Exoprosopa (Exoprosopa) cosmoptera*, sp. nov.

A very characteristic, smallish species, readily recognisable owing to the first posterior cell being closed, and to the black

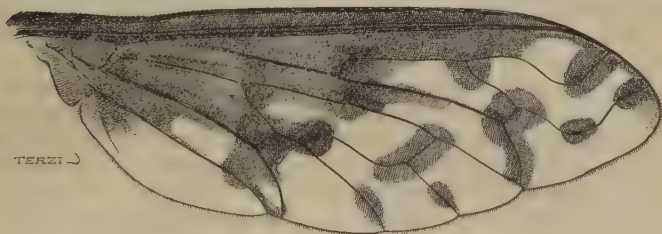


FIG. 35.—*Exoprosopa cosmoptera*, sp. nov. Wing of ♂. × 12.

spots on the wings being much more numerous than usual; it is not unlike a small *Bombylius* of the *B. capensis* group.

Type ♂, a solitary specimen from the Nyasaland Protectorate, near Mangondo Stream, Upper Shiré R., 31 March, 1906 (*Dr. J. E. S. Old*).

♂. Length of body 7 mm.; length of wing 7 mm.

Head entirely black; occiput with narrow whitish postocular band; frons at vertex rather broad, four times as broad as elongate and not very prominent ocellar tubercle, clothed with erect black hair, and with sparse pale yellowish scales in front; face conically prominent, with very sparse yellowish scales, and with entirely black hair. Antennae quite black; first joint black-haired; third joint elongate conical, gradually tapering to a point, with terminal style of less than half its length. Palpi and proboscis black, latter with projecting labella. Thorax entirely black, with black hair and sparse yellowish scales; hair on sides, and probably even that in collar (wanting in case of type) black;

macrochaetae black; pleurae entirely clothed with black hair, even on metapleura. Squamae brownish, with blackish fringe; plumula whitish; halteres dark yellow, with knobs infuscated at base. Scutellum broad and short, entirely black, with sparse yellowish tomentum, and with black bristles on hind border. Abdomen short, blunt at end; hair on sides entirely black, that at base being long and bristly, while lateral hair elsewhere is very short; abdomen clothed above with black and pale yellowish scales, latter forming cross-bands on bases of second and third, and covering whole of fifth, sixth and seventh segments; on each side of second and third segments there is also a patch of white scales; posterior fringe on last segment formed by black, elongate scales; genitalia black; venter entirely black, clothed with yellowish scales and dark hair. Legs and coxae entirely black, or only tibiae yellowish; front legs not distinctly abbreviated, with long, thin tibiae, which are smooth or have only a thin hair on outer side near base, and with very long, thin and almost bare tarsi; front coxae black-haired; femora with black scales, middle pair with two, hind pair with three or four spines; front claws very minute (remainder wanting in case of type). Wings greyish hyaline, with base and fore border infuscated, former to middle of second basal and of anal cell, latter to beyond upper end of marginal cross-vein. In addition, numerous and for most part rounded blackish spots, as follows: a larger one on base of second longitudinal vein and on middle cross-vein, and another at upper end of marginal cross-vein, these two spots being united with fuscous fore border; an elongate spot at end of second longitudinal vein; a broad, rounded spot at base of upper branch of cubital fork, continued as a streak to end of third longitudinal vein; two small dots on last portion of upper branch of cubital fork; a broad elongate spot at end of discoidal cell, across its terminal vein; two small dots, one before end of vein dividing second from third posterior cell, and one before end of fifth vein; a broad spot at end of second basal and at base of discoidal cell, united with a spot at base of third posterior cell; and a broad spot before end of anal cell. Second basal cell hyaline in its upper distal corner, in which is situate grey prae-discoidal spot. Basal hook and basal comb black, latter narrow. Veins black; second longitudinal vein with dip of moderate depth at end, truncate and provided with a short stump; marginal cross-vein curved and strongly recurrent; first posterior cell closed and provided with a short stalk at end; remaining posterior cells of about same breadth at distal extremity, and third at base shorter than fourth; discoidal cell dilated below before end, and bulging into third posterior cell, its terminal vein being short, straight and practically perpendicular; middle cross-vein before middle of discoidal cell; anal cell rather broadly open; axillary lobe elongate and infuscated at extreme base only; alula blackish, with dark fringe.

Group 10. *E. busiris*.

The numerous species of this group are peculiar to the Ethiopian fauna; they show transitions to the *E. dimidiata* and *E. punctulata* groups, while they are distinguished from the *E. balioptera* group chiefly by the absence of well-defined dark spots on the cross-veins and bifurcations. Characteristic for the group are:—the predominantly black body and legs; the mainly black-haired pleurae; the broad, usually not conical, abdomen; the often spinulose front tibiae, and the short, straight, and almost perpendicular terminal vein of the discoidal cell; the discoidal cell is therefore truncate at the end, and of regular shape. The thoracic macrochaetae are well developed

275. *Exoprosopa (Exoprosopa) tabanoides*, sp. nov.

A dark species of considerable size, distinguished by its uniformly infuscated wings, in which all the veins have darker borders.

Type ♀ from N.-E. Rhodesia, 2 October, 1904 (*R. L. Harger*); an additional specimen of same sex from Natal, Umfuli R., September, 1895 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*); and three other ♀♀ from Belgian Congo, Katanga District, 150–200 miles W. of Kambove, 3,500–4,500 ft., 30 September–2 October, 1907 (*Dr. S. A. Neave*).

The present species seems to be allied to *E. schmidtii*, Karsch (1887), from Zanzibar, which has, however, yellower hair on the thorax and abdomen, and a narrower and more elongate body.

♀. Length of body 17–18 mm.; length of wing 19–20 mm.; wing-expanse 44–46 mm.

Head mainly dark reddish; occiput black, but with a broad red band on eye-borders, interrupted near vertex and clothed with whitish scales, which are more abundant towards middle; eyes with broad and deep indentation, and long bisecting line; postvertical furrow narrow; frons rather depressed at vertex, and there thrice as broad as flat and broad ocellar tubercle; frons dark reddish, but ocellar tubercle, and a short median longitudinal stripe in front black; frons clothed with erect black hair, and with dirty whitish scales in front. Face entirely red, conically produced but not pointed, clothed with whitish scales and black hair. Antennae with first and second joints red, and clothed with black hairs (third joint wanting in case of type). Proboscis black, not at all projecting; palpi black. Thorax black, broad, flat and subquadrate, with reddish lateral borders from humeri to postalar calli; thorax clothed on back with black hair and sparse yellowish tomentum; collar yellow above, black on sides and below; yellowish lateral stripes well developed; bristles and notopleural hair black; pleurae black above, and clothed for most part with black hair; metapleural tuft entirely black; sternopleura reddish, clothed with pale yellowish or

whitish scales. Scutellum red with narrowly black base, clothed with sparse yellowish tomentum, and with black bristles on hind border. Squamae reddish-brown, above with a dark and below with a whitish fringe; plumula white; halteres blackish, with knobs dirty whitish above. Abdomen short and subquadrate, blunt at end, and even a little broader than thorax, black, with a broad red spot on sides of second segment, and a smaller one on sides of third segment; abdomen clothed with black and whitish scales, latter more abundant towards sides, forming a narrow complete cross-band at base of second segment and almost entirely covering sixth and seventh segments; hair on sides entirely black, even that in dense basal tuft, remaining lateral hair being very short; last segment with short black fringe on hind border, and with broad black scales; spines on ovipositor black, long and straight; venter entirely black, clothed with black scales and black hair. Legs dark reddish, but femora appearing black on account of their dense clothing of dull black scales; front legs abbreviated, with tibiae beset with very short but distinct spicules on outer side, and with tarsi thick and shortly pilose; front coxae black-haired; spines black; spicules on tibiae rather short; claws black, with dark reddish base, and with very long, pointed basal tooth. Wings long and broad, with an uniform fuscous tinge, which is more intense at extreme base, on fore border and along margins of all veins. Praediscoidal spot very small, pale greyish. Basal hook dark reddish-brown; basal comb red, with black bristles. Veins black, with dark reddish bases; second vein with no dip at end; marginal cross-vein short and not very recurrent; first posterior cell somewhat narrowed at end, but a little broader than anal cell; second posterior cell elongate, oblique, with parallel sides, considerably narrower than third at end; third posterior cell shorter than fourth at base; discoidal cell as broad at end as at base, but with upper and lower veins curved outwards before end; its terminal vein short, straight and perpendicular; middle cross-vein considerably before middle of discoidal cell; axillary lobe elongate; alula transverse, short and blackish, with dark fringe.

276. *Exoprosopa* (*Exoprosopa*) *referta*, sp. nov.

Allied to the preceding species, but distinguished by smaller size, and by bright orange-coloured hair on the notopleural line, in the metapleural tuft, and at the base of the abdomen.

Type ♀, a solitary specimen from S. Nigeria, Ibadan, 11 November, 1913 (*Dr. W. A. Lamborn*).

♀. Length of body 14 mm.; length of wing 16 mm.

Head black; occiput entirely black, with yellowish central fringe, and narrow, whitish postocular band; postvertical furrow narrow. Frons not hollowed at vertex, about four times as broad as flat ocellar tubercle, clothed with erect black hair, and with yellowish scales in front; face conical, with black hair and

yellowish scales. Antennae entirely black; first joint black-haired; third joint elongate conical, with thin terminal style of more than half its length. Proboscis black, not at all projecting; palpi black. Thorax black, dark reddish-brown on postalar calli, with black hair and yellow tomentum on back, and with yellow hair on lateral stripes and in front of scutellum; macrochaetae black; collar bright yellow; notopleural tuft dense and long, bright yellow; pleurae black-haired; sternopleura without scales; notopleural tuft entirely bright yellow. Scutellum dark red, with black base clothed with black scales, yellowish tomentose elsewhere, with black bristles on hind border. Squamae reddish-brown, with yellowish fringe; plumula pale yellow; halteres blackish, with knobs paler above. Abdomen broader than thorax, rather pointed at tip, but not conical, entirely black, clothed above with black and with white scales, latter forming cross-bands at base of second, third and fourth segments, and covering almost completely last two segments; hair on sides dense and bright yellow on first segment, long and black on second, short and black elsewhere; seventh segment with short black fringe on hind border; spines on ovipositor short, curved, shining reddish; venter deep black, with black scales and black hair. Legs and coxae entirely black, with black hair and scales; front legs abbreviated, with tibiae beset with short but distinct spicules on outer side, and with tarsi short, thick and shortly pubescent; claws black, with short, pointed tooth; spines on femora black and well developed. Wings entirely infuscated, with faint metallic reflexions, infuscation deeper at base and along fore border, discoidal cell and all cells at apex and on hind border with subhyaline centres; basal hook and basal comb black, latter narrow. Veins entirely black, even at base; dip at end of second vein shallow; marginal cross-vein not very recurrent; first posterior cell broadly open at end, much broader than anal cell; second posterior cell with parallel sides, and at distal extremity a little narrower than third posterior cell, which is a little shorter than fourth at base; discoidal cell elongate, of roughly uniform breadth, with almost parallel sides, and truncate at end, its terminal vein being short and straight; middle cross-vein before middle of discoidal cell; axillary lobe elongate, mainly subhyaline; alula blackish, with dark fringe.

277. *Exoprosopa* (*Exoprosopa*) *linearis*, sp. nov.

A small species, with elongate, parallel-sided body, black, white-banded abdomen, and uniformly darkened wings.

Type ♂, type ♀, and an additional ♀ from Arabia, Aden, 7-20 March, 1895 (*Capt.*, now *Lt.-Col.*, C. G. Nurse).

♂♀. Length of body 10-11 mm.; length of wing 10-11 mm.

Head black, rather shining; occiput with broad postocular band of glistening, silvery scales; postvertical furrow narrow;

eyes with rather deep but broad indentation, and long bisecting line. Frons distinctly hollowed at vertex, of nearly equal breadth in both sexes, four times as broad as rounded ocellar tubercle, clothed with erect black hair, and with white scales in front. Face somewhat conical and prominent, but flat and obtuse at tip, shining black, with bright yellow mouth borders and jowls, clothed with white scales and black hair, but with yellowish hair beneath. Antennae black, with first joint dark reddish and not longer than second, clothed with black hair; third joint elongate, linear, more than thrice as long as first two joints together, and blunt at end; terminal style (wanting in case of types) probably very short. Proboscis black, short and thick, not at all projecting; palpi black. Thorax elongate, entirely black, with black hair and yellow tomentum on back; hair in collar and notopleural tufts golden-yellow, that forming lateral stripes yellow; macrochaetae black; pleurae shining black, with yellow, long and dense hair, but sternopleura clothed with dense, shining white scales above; metapleural tuft entirely yellow. Scutellum entirely black, with yellow scales, and with long black bristles on hind border. Squamae reddish-brown, with white fringe; plumula yellow; halteres yellowish, with pale knobs. Abdomen elongate, linear, not broader than thorax, blunt at end, entirely black, clothed above with black scales, and with three narrow, complete, and conspicuous cross-bands of white scales at base of second, fourth and sixth segments; third segment with a similar band, which is broadly interrupted in middle; seventh segment clothed for most part with white scales; hair on sides short and black, except on first segment, where it is long, dense and pale yellowish; ♂ genitalia shining black, elongate and cylindrical; spines on ovipositor red; venter black, with two deep transverse bands of silvery-white scales and with dark hair. Legs and coxae entirely black with black scales and black hair; front legs not much abbreviated, with smooth tibiae and rather long tarsal pubescence; spines on femora and tibiae black, long and numerous, three or four on middle femora, six or seven on hind pair; claws black, with short basal tooth. Wings completely infuscated, more intensely along fore border, and more lightly at extreme apex; praediscoidal spot broad, greyish; wings distinctly narrowed at base, almost cuneiform. Basal hook and basal comb black, latter with whitish scales; veins black; second vein with double, but not deep, terminal dip; marginal cross-vein long and recurrent; first posterior cell narrowed at end, but about twice as broad as anal cell; second and third posterior cells elongate, with parallel sides of about same breadth at end; third posterior cell considerably shorter than fourth at base. Discoidal cell elongate, acute at base and obtuse at end, with nearly parallel sides, though vein dividing it from third posterior cell is much bent inwards at base; middle cross-vein long, considerably before

middle of discoidal cell; axillary lobe long and narrow; alula transverse, infuscated, with darkish fringe.

278. *Exoprosopa (Exoprosopa) goliath*, sp. nov.

A gigantic species with broad body and large wings, recalling the European *Anthrax etrusca*, Fabr., in its general shape.

Type ♂, type ♀, and six additional specimens from the Nyasaland Protectorate, Mt. Mlanje, 4 December, 1912–9 January, 1913 (*Dr. S. A. Neave*).

♂♀. Length of body 20–22 mm.; breadth of body 9–10 mm.; length of wing 25–27 mm.; wing-expanse 58–64 mm.

Head black; occiput broad, with yellowish central fringe and whitish postocular band; postvertical furrow broadened behind. Eyes with shallow indentation and distinct bisecting line. Frons distinctly hollowed at vertex, of about equal breadth in both sexes, thrice as broad as broad, elongate ocellar tubercle, which

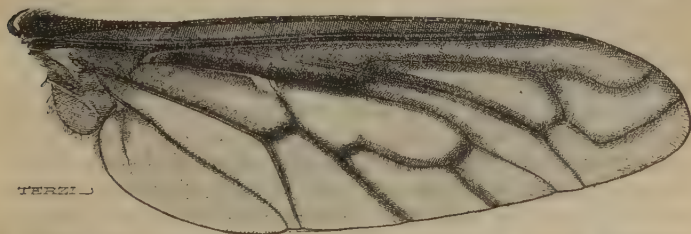


FIG. 36.—*Exoprosopa goliath*, sp. nov. Wing of ♂. $\times 3\frac{1}{2}$.

is situate nearer vertex than in other species; frons clothed with erect black hair, and with narrow yellow scales on anterior half. Face short and broad, bluntly convex, more or less broadly reddish below and on sides, with yellowish hair, which is long and dense on sides below, with black hair and yellow scales in middle below antennae, and with black tuft on upper mouth edge present in ♂ only. Antennae entirely black; first joint thickened, clothed with black hair, and twice as long as second joint; third joint elongate, gradually tapering to a point, not much broadened at base, more than twice as long as first two joints together, with stout terminal style of less than half its length. Proboscis black, thick, short, not at all projecting; palpi black. Thorax very broad, subquadrate, rather convex, black, with dark reddish supra-alar stripe and postalar calli; thorax clothed on back with short black hair and with yellowish tomentum, which is denser and longer in front of scutellum; collar entirely yellow, like notopleural tufts and lateral supra-alar stripe; macrochaetae black; pleurae black, broadly red in ♀, with yellow hair above and whitish hair below; sternopleura without scales; metapleural tuft yellow. Scutellum broad,

dark red, with black and black-scaled base, yellowish tomentose elsewhere, with numerous black bristles on hind border. Squamae red, with yellowish fringe; plumula whitish; halteres dark yellow, with knobs blackish at base and pale yellowish above. Abdomen broad, convex, broadly oval, with hind borders of segments swollen and prominent; abdomen entirely black, and apparently uniformly clothed with black scales on back, and devoid of any band of whitish scales; hair on sides long and pale yellowish at base, short and black and yellowish in middle, short and entirely black at tip; ♂ genitalia black; spines on ovipositor shining red; venter black, with whitish scales, and with pale hair in middle and near base. Legs, including coxae, entirely black; front legs abbreviated, with tibiae sparsely beset with spicules above, with numerous spicules on outer side, and with tarsi quite bare above; front coxae with yellow hair; middle and hind femora with numerous spines; claws black, narrowly red at base, and with very long and stout basal tooth. Wings large greyish hyaline, with base and costal cells reddish, and with middle of fore border infuscated, as far back as fourth longitudinal vein; all veins narrowly edged with fuscous; praediscoidal spot very small and whitish. Veins red, but infuscated towards end; basal hook dark reddish brown; basal comb broad but short, black; second longitudinal vein with scarcely any dip at end; marginal cross-vein short and but slightly recurrent; first posterior cell only slightly narrowed at end, twice as broad as anal cell; second and third posterior cells short and broad, breadth of former at end about two-thirds of that of latter, third posterior cell considerably shorter than fourth at base, and often with a short stump projecting into discoidal cell; middle cross-vein before middle of discoidal cell; discoidal cell very long and rather broad, truncate at end, its terminal vein being short and straight; axillary lobe short and broad; alula reddish, with yellowish fringe.

279. *Exoprosopa* (*Exoprosopa*) *busiris*, Jaennicke (1867).

A medium-sized species, distinguishable from its nearest allies owing to the hair on the face and pleurae being mainly black.

Since its original description (from a ♀ from Nubia) the species has not again been recorded, but I venture to refer to it two ♀♀ from S. Abyssinia (*R. J. Stordy*). In the group of closely allied species that includes *E. busiris*, Jaenn., *E. atrinasis*, Speis., *E. brevinasis*, sp. nov., and *E. spectrum*, Speis., I regard the first as being darker than the others, which agrees with the original description. *E. busiris*, Jaenn., as thus interpreted, has the front tibiae smooth, the front tarsi shortly pilose, and the basal tooth on the claws well developed and sharp. The group seems to be characteristic of the Centro-Oriental portion of the Ethiopian Region.

280. *Exoprosopa (Exoprosopa) atrinasis*, Speiser (1910).

A common East African species, closely allied to the preceding, but distinguished by the yellow hair on the face and pleurae, and by the more hyaline wings, in which the fuscous margins to the veins are accordingly more conspicuous.

Of *E. atrinasis*, which was described from a ♀ from Kilimandjaro, there are in the British Museum several specimens of both sexes from Kenya Colony, Moyale, 14 November, 1911, and from Abyssinia, November, 1911 (*R. J. Stordy*); as also four ♂♂ from Abyssinia, Laga Hardin, 3 September, 1908, and Arussi Country, Gambogi, 14 October, 1908 (*Dr. R. E. Drake-Brockman*).

The ♂, which is as yet undescribed, closely resembles the ♀, its frons being only a little narrower; the genitalia are black. In the present species also the front tibiae are smooth, and the claws have a long, pointed basal tooth; the spines on the ovipositor are black.

281. *Exoprosopa (Exoprosopa) brevinasis*, sp. nov.

Closely allied to the preceding species, but distinguished by being of larger size, and having a bluntly convex, instead of conical, face, and for the most part pale yellowish hair on the sides of the abdomen.

Type ♂, type ♀, and six other specimens from Kenya Colony, Mogorr River and Masai Reserve, May, 1913 (*Capt. A. O. Luckman*): additional specimens from Kenya Colony include a ♂ from Lugh, 2 November, 1911 (*Dr. G. R. H. Chell*), which appears to belong here, but has chiefly black hair on the sides of the abdomen; and, from Kabete, 6 May, 1913 (*T. J. Anderson*), some small examples, measuring only 12 mm. in length, with the sides of the abdomen clothed partly with black hair.

♂♀. Length of body 14–16 mm.; length of wing 17–19 mm.

Head black, with mouth borders and jowls yellowish. Occiput dark grey dusted, with yellowish central fringe and pale yellowish postocular band; postvertical furrow narrow, separated from vertex by a groove. Eyes with broad indentation and long bisecting line. Frons narrow, of equal breadth in both sexes, thrice as broad as ocellar tubercle, slightly depressed at vertex, clothed with erect black hair, and with narrow yellowish scales on anterior half. Face gently rounded, not very prominent, blunt and emarginate at tip, with yellowish scales and pale yellowish hair, without black tuft on upper mouth edge. Antennae entirely black; first joint rather elongate, and clothed with black hair above, but with some yellowish hairs beneath; third joint elongate conical, but little swollen at base, half as long again as first two joints together, with short terminal style. Proboscis black, projecting as far as length of antennae; palpi blackish, pale-haired. Thorax entirely black, clothed on back with black hair and yellow tomentum, latter being longer in front

of scutellum, and on disc forming three more or less distinct longitudinal, parallel stripes; there is moreover a distinct supralar stripe of pale yellowish hair on each side; collar entirely yellow, above and below; macrochaetae black; pleurae and breast clothed with yellow hair, that on sternopleura being softer and whitish; metapleural tuft entirely yellow. Scutellum red, narrowly black at base, clothed with yellow tomentum, and with black bristles on hind border. Squamae reddish-yellow, with pale, golden-yellow fringe; plumula pale yellowish; halteres dark yellow, with knobs infuscated at base. Abdomen as broad as thorax, rather blunt at end and with parallel sides, entirely black, clothed above with black hair, and with whitish or pale yellowish scales, latter forming a cross-band at base of each segment except first, and almost entirely covering last two segments; hair on sides entirely pale yellowish or whitish, long and dense on first segment, shorter on remainder, and with some black hairs intermingled near tip, chiefly in ♀; posterior fringe on last segment black; ♂ genitalia black, narrow and oblique; spines on ovipositor black; venter black, densely clothed with whitish or pale yellowish scales, and with long hair of same colour. Legs and coxae entirely black, with yellowish scales; front legs abbreviated, with short, thick, smooth tibiae, and with shortly pubescent tarsi; front coxae with yellow hair; femora and tibiae with long black spines; claws black, with long, sharp basal tooth. Wings long, broadly blunt at end, greyish hyaline, with base and costal cell yellowish, and in addition with dark fore border, reaching fourth longitudinal vein on proximal side of middle cross-vein, and thence extending to second vein as far as marginal cross-vein; all cross-veins and bases of bifurcations margined with fuscous. Basal hook and basal comb black, latter short and broad, densely clothed with yellowish tomentum. Veins red, infuscated in apical half of wing; terminal dip in second longitudinal vein broad, but simple; marginal cross-vein not very recurrent; first posterior cell narrowed at end, only slightly broader than anal cell; second posterior cell short, with parallel sides, about as broad as third posterior cell at end; latter cell much shorter than fourth posterior cell at base; middle cross-vein before middle of discoidal cell, which is acute at base and truncate at end, with terminal cross-vein straight and nearly perpendicular; axillary lobe broad, but not very short; alula yellow, with pale yellowish fringe.

282. *Exoprosopa* (*Exoprosopa*) *magnipennis*, sp. nov.

Closely allied to *E. brevinasis*, but distinguishable by being of even larger size, by the first posterior cell in the wings being closed, by the marginal cell being less infuscated in the middle, and by the head, legs and base of the antennae being red.

Type ♀ and an additional specimen of same sex from Kenya Colony, Kabete, 24 May, 1916 (*T. J. Anderson*).

♀. Length of body 16-17 mm.; length of wing 20-22 mm.; wing-expanse 46-50 mm.

Head red, with black ocellar spot; occiput with dark yellowish central fringe, and broad whitish postocular band. Frons thrice as broad as ocellar tubercle, clothed with erect black hair, which is denser towards middle, and with whitish scales in front; face rounded, moderately prominent, with whitish scales and with whitish hair on sides and below, but with a small black tuft on upper mouth edge. Antennae with first and second joints red, first more than twice as long as second, and clothed with black hair; third joint black, regularly conical, narrower than second joint, about as long as first two joints together, with short, thick terminal style. Proboscis black, slightly projecting; palpi reddish, with whitish hairs. Thorax black above, reddish on sides and on pleurae, clothed on back with short, erect, black hair, and yellowish scales; collar and notopleural tuft pale yellowish, supra-alar stripe whitish, macrochaetae black; hair on pleurae and in metapleural tuft entirely pale yellowish or even whitish, without any intermixture of black hairs. Scutellum entirely red, with scattered black hairs, pale yellowish scales, and with black bristles on hind border. Squamae reddish, with whitish fringe; halteres whitish, with yellowish stalks. Abdomen broad and rather flat, entirely black above, except that first segment has a narrow reddish hind border; abdomen clothed on back with black and with white or pale yellowish scales, latter forming complete yellowish cross-bands at base of second, third and fifth segments, sixth and seventh segments each having a white band or being quite white; hair on sides whitish on first and second segments, black and whitish on remainder, last segment having a fringe of black bristly hairs. Venter black, with narrow reddish hind borders to segments, and with reddish base; first four segments densely clothed with whitish scales; hair whitish. Spines on ovipositor reddish. Legs reddish, with black tarsi; coxae with pale yellowish hair, and with some black bristly hairs at tips; front tibiae short and smooth; front tarsi with soft pubescence; scales yellowish or whitish; spicules on tibiae black; hind femora with complete row of spines below; claws black with long, pointed basal tooth. Wings very long and proportionally broad, much longer than body, greyish-hyaline, with yellowish base and yellowish costal cells; marginal cell only very slightly infuscated towards middle; cross-veins edged with fuscous, that at lower end of second basal cell and discal one more broadly. Basal hook and comb reddish, latter with black bristles outwardly; veins reddish, with infuscated ends; second longitudinal vein without dip at end; first posterior cell closed on hind border, sometimes even shortly stalked; discal cross-vein a little before middle of discoidal cell; apical vein of discoidal cell straight and nearly perpendicular; third posterior cell broader than second and fourth; anal cell much

narrowed at end; axillary lobe broad; alula rounded, pale yellowish, with whitish fringe.

283. *Exoprosopa (Exoprosopa) spectrum*, Speiser (1910).

A very distinct-looking species, evidently allied to the preceding four, but at once distinguished by its dimidiate wings, in which the cross-veins are without a fuscous edging.

Of this species, which was originally described from a ♀ from Kilimandjaro, the British Museum possesses ♀♀ from Kenya Colony, Masai, 1913, and Mogorr River, May, 1913 (*A. O. Luckman*), and "forest near Meru," 13 April, 1912 (the late *Capt. F. C. Selous, D.S.O.*); also very numerous specimens of both sexes from the Uganda Protectorate as follows: S. of Lake George, 3,200–3,400 ft., 17–19 October, 1911; Southern Toro, Mbarara, Fort Portal Road, 3,800–4,200 ft., 22–24 October, 1911; Semliki Plains, near S. shore of Lake Albert, 2,200 ft., 25–27

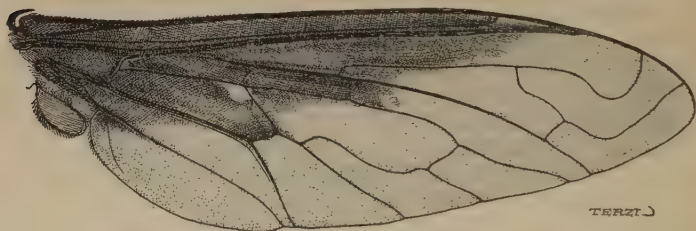


FIG. 37.—*Exoprosopa spectrum*, Speiser. Wing of ♀. $\times 5$.

November, 1911; Buamba Forest, Semliki Valley, 2,300–2,800 ft., 3–7 November, 1911 (all collected by *Dr. S. A. Neave*); and a series of ♀♀ from Unyoro District (*Dr. C. H. Marshall*).

In the present species the front tibiae are long and beset with two or three spicules near the base; the spines on the ovipositor are black; the marginal cross-vein is S-shaped and very recurrent; the first posterior cell is broadly open, the third acute at the base, and there nearly on a level with the fourth posterior cell; the discoidal cell is truncate at the end; and the claws have a short basal tooth.

The as yet undescribed ♂ closely resembles the ♀, but has a slightly narrower frons, and is especially noticeable owing to the posterior half of the wing being quite hyaline, not darkened as in the ♀. The dark basal part of the wing is therefore more conspicuous, the species resembling members of the *E. dimidiata* group, especially *E. hyalodisca* and *E. stenomelaena*, which are very like it. The genitalia are black, and clothed with a dense tuft of black hair.

The description of *Anthrax fumipennis*, Wiedemann (1828), without doubt an *Exoprosopa* of unknown provenance, seems to agree rather well with the present species.

284. *Exoprosopa* (*Exoprosopa*) *thoracica*, sp. nov.

Distinguished by its entirely black antennae, the third joint of which has a long terminal style, and by the bright orange-yellow hair on the thorax, and in the collar and notopleural tuft.

Type ♂, type ♀, and some additional specimens from Nyasaland, Mt. Mlanje, December, 1912–February, 1913 (*Dr. S. A. Neave*).

The present and the three following species form a group which is different from that constituted by the five preceding species, chiefly owing to the wings being much shorter and differently coloured; these species show some affinity to the members of the *E. dimidiata* group.

♂♀. Length of body 13–15 mm.; length of wing 13–15 mm.

Head black; occiput with white postocular band, and yellow central fringe; postvertical furrow narrow; frons of about same breadth in both sexes, at vertex thrice as broad as ocellar tubercle, clothed with erect, black hair, and with yellowish scales on front half; face conical but obtuse at tip, clothed with yellowish scales, with black hair in middle and on upper mouth edge, and with whitish hair on sides and below; mouth borders and jowls reddish-yellow. Antennae entirely black; first joint much longer than second and clothed with black hair; third joint conical, not broadened at base, as long as first two joints together, with thin terminal style a little shorter than itself. Proboscis black, not at all projecting; palpi black. Thorax black, with dark reddish postalar calli, and clothed on disc with black scales and black hair, entire collar, notopleural tufts and lateral supra-alar stripes composed of bright orange hair, some black hairs being present above notopleural tufts; bristles black; pleurae in middle and below with black hair in ♂, and for most part with reddish hair in ♀; metapleural tuft entirely orange; sternopleura without scales. Scutellum dark red, narrowly black and black-scaled at base, with sparse yellowish tomentum, and with black bristles on hind border. Squamae reddish-brown, with yellowish fringe; plumula orange; halteres entirely black. Abdomen as broad as thorax, with parallel sides and truncate at end, black, with more or less developed red spots on sides of second and third segments; abdomen clothed above with black scales, but second and third segments each with a cross-band of white scales, broad on sides and narrowed or even interrupted in middle; sixth and seventh segments with numerous white scales, ground-colour of hind border of seventh segment red in ♂; hair on sides white on first, second and base of third segment, black and rather long elsewhere; posterior fringe on seventh segment dense, long and black; ♂ genitalia black; spines on ovipositor black, with more or less broadly red bases; venter black, densely clothed with white scales and white hair, with a more or less developed black cross-band on fourth and fifth segments. Legs and coxae entirely black, with black scales;

front legs abbreviated, with smooth tibiae and shortly pubescent tarsi; front coxae for most part with black hair in ♂, and orange-yellow hair in ♀; spines on femora and tibiae long and black, two or three on middle femora, and a complete row on hind pair; claws black, with sharp basal tooth. Wings rather short, with black base and dark fore border, latter extending to fourth vein on proximal side of middle cross-vein, and to second vein as far as end of auxiliary vein; praediscoidal spot small and whitish, situate in upper external angle of hyaline second basal cell; limit of dark fore border rather uncertain and not sharply defined. Basal hook black; basal comb short and broad, entirely black. Veins black, second longitudinal with scarcely any dip at end; marginal cross-vein strongly S-shaped, but not very recurrent; first posterior cell narrowed at end, but distinctly broader than anal cell; second posterior cell narrower at end than third, which is shorter than fourth posterior cell at base; middle cross-vein before middle of discoidal cell, which is of regular shape, about as broad at base as at end, and not very truncate at distal extremity, because its terminal vein is more oblique than in allied species. Axillary lobe rather short, but not very broad; alula yellowish subhyaline, with darkish fringe.

285. *Exoprosopa* (*Exoprosopa*) *mesopleuralis*, sp. nov.

Closely allied to the preceding species but smaller, and at once distinguished by the much narrower frons, by the different coloration of the hair on the thorax, and by the different abdominal pattern.

Type ♂, type ♀, and some further specimens from Nyasaland, Mt. Mlanje, 18–21 November, 1912 (*Dr. S. A. Neave*); additional examples, likewise from Nyasaland, collected respectively by *Drs. H. S. Stannus* and *J. K. Norris*.

♂♀. Length of body 11–13 mm.; length of wing 10–12 mm.

Head and its appendages as in preceding species, but frons in ♂ much narrower, being about as broad as dark reddish and very prominent ocellar tubercle; in ♀ it is distinctly narrower than in preceding species, but twice as broad as that of ♂, and about thrice as broad as narrow ocellar tubercle; face broadly reddish below and on sides, with whitish, shining silvery scales; third antennal joint shortly conical, about as long as first two joints together, its terminal style of approximately same length as itself. Thorax clothed on back with black hair, and with black scales intermixed with rather numerous yellowish ones; hair in collar, notopleural tufts and lateral stripes yellowish; bristles black; pleurae absolutely devoid of black hair in both sexes, pale yellowish above, with a broad stripe of white hair on middle of mesopleura and on sternopleura; metapleural tuft entirely whitish. Scutellum as in preceding species. Squamae brown, with whitish fringe; plumula white; halteres yellow, with whitish knobs. Abdomen as in preceding species,

but sometimes more broadly red on sides; second segment apparently devoid of a cross-band; third and fourth segments each with deep cross-band of yellowish scales, more or less interrupted in middle; sixth and seventh segments entirely clothed with yellowish scales; all scales more whitish in ♀; hair on sides white at base, short and black elsewhere; last segment with fringe of long dark scales, wanting in preceding species; ♂ genitalia black; spines on ovipositor black; venter red at base, black at tip, clothed with white scales and white hair on basal half. Legs as in preceding species, but femora with numerous pale yellowish or whitish scales, at least below. Wings as in preceding species, but with dark fore border more clearly defined and narrower, not extending beyond first longitudinal vein, or only first basal and the base of marginal cell being a little infuscated; first posterior cell not narrowed at end, and much broader than anal cell.

286. *Exoprosopa (Exoprosopa) albonigra*, sp. nov.

Allied to the two preceding species, but distinguished by different antennae, more elongate wings and a peculiar abdominal pattern.

Type ♂, type ♀, and some additional specimens from Nyasaland, Mt. Mlanje, November–December, 1912, and Portuguese East Africa, E. of Mt. Mlanje, 3–7 October, 1912 (*Dr. S. A. Neave*); another ♀ from Tanganyika Territory, November, 1917 (*Dr. G. D. H. Carpenter*); and a ♀ from Kenya Colony, Mombasa, Shimba Hills, 6,000 ft., 6 June, 1912 (*Dr. Wm. T. Radford*). A ♀ from N.-W. Rhodesia, Chilanga, 4,000 ft., 15 December, 1913 (*R. C. Wood*), appears also to belong here, as does an immature specimen from Kenya Colony (*R. J. Stordy*).

♂♀. Length of body 13–15 mm.; length of wing 15–17 mm.

Head black, shaped like that of *E. thoracica*, Bezzi, frons about thrice as broad as ocellar tubercle in both sexes; scales on frons and face shining white, face with entirely white hair, except oral tuft, which is black; third antennal joint very elongate, linear, more than twice as long as first two joints together, with stout and very short style; proboscis slightly projecting. Thorax as in preceding species, with pale yellowish collar and entirely whitish-haired pleurae; metapleural tuft entirely whitish; scutellum as in preceding species. Squamae reddish-brown, with quite white fringe; plumula whitish; halteres blackish, with knobs slightly paler above. Abdomen elongate, somewhat pointed at tip, entirely black, clothed on back with black scales, and with a well-developed pattern of white scales, forming a complete cross-band of uniform depth at base of second segment, a broad spot on each side of third, and a complete and narrower band at base of fourth segment, expanded on sides and covering sixth and seventh segments almost completely; hair on sides white on first and on base of second segment, short

and black elsewhere; last segment with fringe of short black hair; ♂ genitalia black and black-haired; spines on ovipositor black with reddish bases; venter black, with white scales and white hair, fifth segment forming a black cross-band. Legs as in *E. thoracica*, Bezzi, with numerous long black spines; front coxae with white hair, but femora devoid of whitish scales. Wings long and narrow, greyish-hyaline, yellowish at base, with dark yellowish costal cells, and with ill-defined fuscous fore border extending to fourth longitudinal vein and to marginal cross-vein in ♀, but ending much sooner in ♂. Veins as in *E. thoracica*, but first posterior cell less narrowed at end and twice as broad as anal cell; discoidal cell more elongate and more truncate at end, its terminal vein being short, straight and almost perpendicular; middle cross-vein considerably before middle of discoidal cell; axillary lobe elongate; alula transverse, yellowish, with darkish fringe.

287. *Exoprosopa* (*Exoprosopa*) *luteicosta*, Bezzi.

A South African species, described by me in my memoir on the Bombyliidae of the South African Museum, but in the Museum of Budapest also represented by specimens from East Africa.

In the British Museum there are numerous specimens of both sexes from various localities, as follows: Transvaal, Pretoria, March, 1914 (*Miss J. Brincker*); Belgian Congo, Katanga District, Kambove, 4,000–5,000 ft., 31 March, 1907, and 150–200 miles W. of Kambove, 3,500–4,500 ft., 19 October, 1907 (*Dr. S. A. Neave*); Nyasaland Protectorate, 1909 (*Dr. J. K. Norris*), Chenzi, near Domira Bay, 2,420 ft., 12 December, 1914 (*Dr. W. A. Lamborn*), and Chikala District and Zomba, January, 1918 (*D. H. S. Stannus*); and Portuguese East Africa, E. of Mt. Mlanje (*Dr. S. A. Neave*), and Port Amelia (*F. V. Beste*). The specimens from Kambove, Katanga, 31 March, 1907 (*Dr. S. A. Neave*) have the fore borders of the wings broadly infuscated.

288. *Exoprosopa* (*Exoprosopa*) *fissicornis*, sp. nov.

Described by me from a ♀ from East Africa, in my paper on the Bombyliidae in the Budapest Museum, and recognisable owing to the peculiar position of the antennal style, on account of which the third antennal joint appears to be bifurcated at the tip.

There is in the British Museum a ♂ specimen from Kenya Colony, Mbuyuni, Serengetti Plains, 24 May, 1916 (*T. J. Anderson*). The undescribed ♂ is very like the ♀, with a narrower frons, and with the bifurcation of the third antennal joint less pronounced.

289. *Exoprosopa* (*Exoprosopa*) *temnocera*, sp. nov.

Described by me (*loc. cit.*) from a specimen from Abyssinia in the Budapest Museum.

A ♂ from Nyasaland (*Dr. J. B. Davey*), without antennae, possibly belongs to this species.

Group 11. *E. inermis*.

This is a small and exclusively Ethiopian group, so far as at present known. The species composing it exhibit the following characters: body and legs for the most part red; face obtuse and rounded; thoracic and scutellar macrochaetae much reduced or even indistinct; spines on femora wanting; spicules on tibiae short; and wings unicolorous, with an irregularly shaped discoidal cell.

290. *Exoprosopa* (*Exoprosopa*) *pediformis*, sp. nov.

Closely allied to *E. inermis*, Bezzi (1912), but apparently distinct owing to the third antennal joint being of a different shape.

Type ♂ and type ♀, a solitary couple of specimens from Nyasaland, Marimba, 17 December, 1910 (*Dr. J. E. S. Old*).

♂♀. Length of body 12(♂)–15(♀) mm.; length of wing 10–12 mm.

Head entirely red, even on occiput. Eyes with deep indentation and long bisecting line; occiput with narrow whitish postocular band, and narrow postvertical furrow. Frons gently convex and rather broad, in ♂ more than thrice as broad as rounded and not very prominent ocellar tubercle, in ♀ considerably broader; frons clothed with erect dark hair, and with pale yellowish scales in front. Face gently rounded, obtuse at tip, with pale yellowish scales, with short black hair in middle and on upper mouth edge, and with whitish hair on sides and below; mouth borders pale yellowish. Antennae short, entirely red; first joint rather elongate, with short hairs, which are black on upper side and pale beneath; third joint shaped as in genus *Villa*, its short and inflated basal part being not larger than second joint, and its terminal part being suddenly constricted into a styliform portion, which has no distinct, or only a rudimentary, style at tip; narrowed part darker in colour, almost blackish. Proboscis black, not at all projecting; palpi reddish-yellow, pale-haired. Thorax black on disc, red on sides and behind, clothed on back with dense yellowish tomentum; collar short and entirely pale yellowish, like notopleural tufts; supra-alar stripe white; the bristles indistinct, or only one or two very short, yellowish ones on postalar calli. Pleurae red, with entirely pale hair, yellowish in front and below, whitish above near base of wings; metapleural tuft pale yellowish. Scutellum broad, convex, entirely red, with tomentum yellowish in middle and behind, whitish on sides, and without distinct bristles on hind border. Squamae brownish-yellow, with dark fringe; plumula white; halteres whitish, with stalks yellowish above. Abdomen as broad as thorax, blunt at tip, with parallel sides; abdomen red, only first segment in middle, a basal median

spot on second segment, and sometimes another on third segment, being black; tergites clothed with yellowish and whitish scales, latter forming basal cross-bands on second segment, on sides of third and fourth, and on sixth and seventh; hair on sides entirely whitish or pale yellowish, dense but not very long on first segment, very short and sparse elsewhere; last segment without distinct posterior fringe; ♂ genitalia red, clothed with yellow hair; spines on ovipositor black; venter entirely red, with white scales and hair. Legs and coxae reddish, with tips of tarsi black; front legs abbreviated, with smooth tibiae and not very pubescent tarsi; front coxae with yellowish hair; middle femora without spines; hind femora with some short bristly hairs beneath near tips; spicules on tibiae black and very short; femora and tibiae with dense whitish scales; claws red, with black tips, and short, pointed basal tooth. Wings short and broad, faintly tinged with whitish-grey, with base and costal cells yellowish, and with all veins broadly edged with a not very dark but distinct fuscous border, more developed in ♀ than in ♂; praediscoidal spot very small, whitish; basal hook and basal comb red, latter with yellowish scales. Veins fuscous, with reddish base; second longitudinal vein with broad and deep terminal dip; marginal cross-vein S-shaped and recurrent; upper branch of cubital fork abruptly divergent from main stem, twice curved at right angles, at base and towards middle; first posterior cell not narrowed at end, twice as broad at distal extremity as at base; second posterior cell short and rectangular, its lateral veins being straight, and cell itself a little narrower at end than third posterior cell; latter very truncate at base, and there shorter than fourth posterior cell; discoidal cell pediform, short, as broad at base as at end, vein dividing it from third posterior cell being strongly S-shaped and forming two angles, a basal one projecting into discoidal cell and usually provided with a short stump, and another protruding into third posterior cell and rounded. Middle cross-vein on middle of discoidal cell; terminal vein of discoidal cell short and straight, but rather oblique; anal cell broadly open. Axillary lobe very short and broad; alula broad, with darkish fringe.

Group 12. *E. stupida*.

This group is an artificial one, based as it chiefly is on the presence of hyaline wings, without colour-markings. The species comprised in the group, however, present the following further points of agreement: small size, the length rarely exceeding 10 mm.; slight development of the basal tooth on the claws; a short or moderately long antennal style; and short wings, which have no distinct praediscoidal spot and, as regards the shape of the discoidal cell, resemble the wings of the species of the *E. punctulata* group.

The members of the present group appear to be mainly Mediterranean, and in the Ethiopian Region the species belonging to it are more numerous in the north-east, though the range of the group also extends to the south. The species more closely allied to the typical Mediterranean *E. stupida*, Rossi, seem to be distinguished by the great development of shining metallic scales on the head and body.

291. *Exoprosopa (Exoprosopa) serva*, sp. nov.

A small, yellowish tomentose species, with entirely hyaline and iridescent wings, distinguished by the tibiae and the first and second joints of the antennae being reddish-yellow.

Type ♂, a solitary specimen from Arabia, Lahej, 11 May, 1895 (*Capt.*, now *Lt.-Col.*, C. G. Nurse).

♂. Length of body 8 mm.; length of wing 7.5 mm.

Head black, with jowls and lower part of face broadly yellow; occiput slightly developed and not very prominent, clothed with yellowish scales and with whitish postocular band; eyes with broad but not deep indentation, and with short bisecting line; postocular furrow broad and short. Frons narrow at vertex, about twice as broad as elongate ocellar tubercle, near antennae occupying one-third of breadth of head, clothed with short black hair and yellowish scales. Face prominent, but rounded and blunt at tip, with whitish scales and whitish hair. Antennae with first joint rather elongate, entirely reddish, with yellowish hairs below; second joint globular and reddish; third joint elongate, blackish, about as long as first two joints together, with short and stout terminal style. Proboscis black, not projecting; palpi rather short, yellowish and pale-haired. Thorax entirely black, with yellowish tomentum on back, and with pale yellowish hair in collar and on notopleural line; lateral stripe yellowish and not very distinct; all bristles thin, pale yellowish; pleurae black with whitish hair even on the metapleura. Scutellum black, with yellowish tomentum, and with pale yellowish bristles on hind border. Squamae, halteres and plumula white. Abdomen elongate, as broad as thorax, blunt at tip, black, with red spots on sides of second and of third segments, and with hind borders of segments reddish; tergites clothed with pale yellowish and whitish scales, latter more abundant on base and sides of first three segments and on sides of remainder; hair on sides of first segment white, long and dense, remaining segments almost without hair on sides, or hair concealed among broad whitish scales. Genitalia reddish-yellow, pale-haired; venter black, with dense white scales and sparse whitish hair. Legs and coxae black, but tibiae reddish-yellow with blackish tips, and femora densely clothed with white scales; front legs not much abbreviated, with smooth tibiae, and tarsi with sparse, but rather long, thin hair above; front coxae with whitish hair and scales; middle femora with a single spine, hind femora with

two or three spines; tibiae with thin spicules; claws black and thin, with short and thin, but distinct basal tooth. Wings vitreous even at base and in costal cells; root covered with a white tegula; basal hook yellowish; basal comb small and narrow, densely clothed with whitish scales. Veins entirely yellow, paler towards base; second longitudinal vein with a double but not deep terminal dip; marginal cross-vein short and straight, perpendicular; first posterior cell not much narrowed, as broad at end as at base; second posterior cell long, broadened at end, broader than third, and as broad as fourth posterior cell; third posterior cell much shorter than fourth at base; discoidal cell short and small, with broad and angulate base, and narrow, almost truncate distal extremity, its terminal vein being short, straight and not very oblique; middle cross-vein before middle of discoidal cell; anal cell rather broadly open; axillary lobe short and broad; alula hyaline, with white fringe.

292. *Exoprosopa* (*Exoprosopa*) *erronea*, sp. nov.

I have come to the conclusion that the specimens from N. Nyasa (*Dr. J. B. Davey*) referred by me to *E. minois*, Loew (1869), in my paper of 1912 (*Trans. Ent. Soc. Lond.*, 1912, p. 650), are specifically distinct from this Mediterranean species, although closely allied to it. I therefore propose for them the new name given above. In *E. minos*, Mg., and in *E. minois*, Lw., the terminal cross-vein of the discoidal cell is long, S-shaped and horizontal, and therefore I have placed them in the subgenus *Defilippia*; in the present species the vein in question is straight and but moderately oblique. In addition to the type, the British Museum possesses a doubtfully conspecific ♀ from Nyasaland, Zomba (*Dr. H. S. Stannus*), which has the base of the wings pale yellowish, and the costal cells not infuscated.

♂. Length of body 10–11 mm.; length of wing 8–9 mm.

Head entirely black; occiput well developed and very prominent, with long, narrow postvertical furrow, and shining white postocular band; frons at vertex about twice as broad as elongate ocellar tubercle, clothed with erect black hair and with yellowish hairs in front; face rounded, blunt, with whitish scales and hair, and small black oral tuft; antennae entirely black, with first joint short and black-haired, and third joint conical, provided with short terminal style; proboscis not or scarcely projecting. Thorax entirely black, with yellow tomentum, and with entirely yellowish hair in collar and on notopleural line; whitish lateral stripes present; bristles black, strong and long; pleurae with entirely pale yellowish or whitish hair, even on metapleura. Scutellum red, with black base, clothed with yellow tomentum and with long black bristles on hind border. Squamae brown, with white fringe; plumula white; halteres yellow. Abdomen blunt at end, entirely black,

with black and yellowish scales, latter forming deep cross-bands at base of segments; hair at base long and whitish, that at tip short and black; ♂ genitalia black and black-haired; venter black, with white scales and hair. Legs entirely black, shaped as in preceding species; spines on femora stronger and more numerous, like spicules on tibiae; claws with small tooth. Wing hyaline, with extreme base and costal cells very pale yellowish; basal hook and basal comb black; veins yellow, disposed much as in preceding species, but with third posterior cell narrower at base and more elongate, its base approaching nearer to that of fourth posterior cell; discoidal cell about as broad at base as at end; alula with pale yellowish fringe.

293. *Exoprosopa* (*Exoprosopa*) *brachycera*, sp. nov.

Closely allied to the preceding species, but differing from it and from its allies owing to the third antennal joint being very short.

Type ♀, a solitary specimen from Nyasaland, Blantyre, 6 May, 1910 (*Dr. J. B. Davey*).

♀. Length of body 7 mm.; length of wing 8 mm.

Head entirely shining black; occiput with yellowish central fringe and white postocular band; frons polished, with erect black hair, and with shining aeneous scales in front; face somewhat conical, with black hair, shining bronze scales and some yellowish hairs on sides; mouth borders pale yellowish. Antennae short, quite black; first joint with black hairs; third joint conical, not longer than first joint, with long, thin terminal style, about as long as whole antenna. Proboscis black, not projecting. Thorax entirely black, somewhat shining on back, clothed with scaly yellowish tomentum and whitish-yellow hair, and bearing strong black bristles; pleurae clothed entirely with yellowish hair, even on metapleura; sternopleura with patch of shining whitish-yellow, scales. Scutellum quite black. Halteres yellowish; squamae blackish, with white fringe. Abdomen entirely black, with transverse bands of yellowish scales; on sides of third segment, and moreover on last two segments there are white scales; hair on sides long and whitish at base, very sparse elsewhere; venter black, clothed with white scales. Legs entirely black; front coxae with yellowish hairs; front tibiae with only one or two very short spicules near base; front tarsi with short pubescence; middle femora without, hind femora with only two spines below near end; claws black. Wings greyish-hyaline, strongly iridescent; extreme base and costal cells infuscated, middle of marginal cell and of first basal cell also faintly infuscated; basal hook black; basal comb very small and likewise black; veins black. Second longitudinal vein with simple dip at end; discal cross-vein before middle of discoidal cell, and second longitudinal vein originating a little before it; first posterior cell at end one-third of breadth of

second, which is nearly as broad as fourth and a little broader than third; anal cell as broadly open as first posterior cell; discoidal cell acute outwardly, its terminal vein, however, very short and nearly straight; axillary lobe narrow; alula very small and infuscated.

294. *Exoprosopa* (*Exoprosopa*) *ancilla*, sp. nov.

A small species, with perfectly hyaline wings, entirely black antennae and legs, black hair on the lower part of the pleura, and mainly yellowish postalar bristles.

Type ♂, type ♀, and some additional specimens of both sexes from the Gambia: Jappeni, 29 March, 1911, Tonto, 16 March, 1911, Gasang, 18 March, 1911, and Duniajoe, 24 April, 1911, all collected by *Dr. J. J. Simpson*; six other examples from Togoland (Depia, Chamba and Kunkwa), January–February, 1917 (*Dr. J. J. Simpson*).

♂♀. Length of body 8–9.5 mm.; length of wing 7.5–9 mm.

Head black; occiput well developed, with long, narrow post-vertical furrow, and narrow white postocular band; eyes with broad, shallow indentation, but long bisecting line. Frons in ♂ very narrow, only a little broader than ocellar tubercle, in ♀ about twice as broad as in ♂, densely clothed with short black hair, and with golden (♂) or yellowish scales in front; face rounded, prominent but obtuse, clothed mainly with black hair, with yellowish hair on sides beneath, and with pale yellowish or whitish scales; mouth borders yellow, a little more broadly in ♀. Antennae entirely black; first joint short and black-haired; third joint conical, a little longer than first two joints together, with rather thin terminal style of half its length. Palpi and proboscis black, latter not at all projecting. Thorax entirely black, with black tomentum on back; hair in collar above, and that in notopleural tufts bright yellow in ♂, pale yellowish in ♀; lateral stripes yellowish; bristles long, praesutural ones black, postalar bristles usually yellow; pleurae above with yellowish, below with black hair, even on sides of collar, but metapleural tuft entirely yellowish. Scutellum black, with dark red hind border, clothed with yellowish tomentum, and with black bristles behind. Squamae greyish-pellucid, with white fringe; plumula white; halteres yellow, with whitish knobs. Abdomen somewhat conical, but not very pointed behind, black, with more or less developed red spots on sides of second and third segments; dorsum of abdomen clothed in middle with black, and on sides with white scales, latter forming a broad longitudinal stripe on each side, more richly developed and broader in ♂ than in ♀; hair on sides long and white at base, short and whitish on remainder of basal half, black and short on distal half; ♂ genitalia black; spines on ovipositor reddish yellow; venter black, with whitish scales on hind borders of segments. Legs black in ♂, largely ochraceous in ♀; front pair not much abbreviated, with

tibiae smooth and with tarsi sparsely clothed with short hair; front coxae black-haired; hind femora sparsely spinose beneath; spicules on tibiae short; claws thin with short, pointed basal tooth. Wings hyaline, iridescent, extreme base and costal cells only slightly pale yellowish; basal hook black; basal comb small and black, but with dense yellowish scales. Veins fuscous, with yellow bases, and disposed much as in *E. serva*, Bezzi, but first posterior cell broader at end, though always much narrower than second; discoidal cell about as broad at base as at distal extremity; base of third posterior cell much narrower and longer; alula with whitish fringe.

295. *Exoprosopa* (*Exoprosopa*) *chionea*, sp. nov.

Closely allied to the preceding species, but at once distinguished by the hair on the frons and on the sides of the thorax being entirely white.

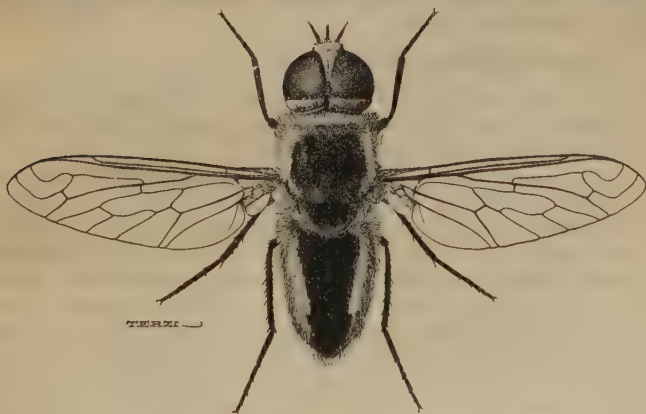


FIG. 38.—*Exoprosopa chionea*, sp. nov. ♂. × 4.

Type ♂ and some additional specimens of the same sex from N.-W. Rhodesia, Chilanga, 4,030 ft., "on rocky path," 4 September, 1913 (*R. C. Wood*).

♂. Length of body 10–11 mm.; length of wing 9–10 mm.

Head as in preceding species; occiput with dense white scales, and with broader, shining white, postocular stripe; frons densely clothed with erect, white hair, and with shining white scales in front; face not very prominent, red, with a more or less broad black spot in middle, and entirely clothed with white scales and white hair. Antennae entirely black; first joint rather short and clothed exclusively with white hairs; third joint elongate conical, about twice as long as first two joints together, with thin terminal style of less than half its length; proboscis somewhat projecting. Thorax as in preceding species, but collar above,

notopleural tufts and supra-alar stripes composed entirely of white hair; bristles strong and long, entirely black; hair on pleurae white above, entirely black on sides of collar, on lower part of mesopleura, on whole of sternopleura and on breast, metapleural tuft white. Squamae greyish-pellucid, with white fringe; plumula white; halteres pale yellowish, with whitish knobs. Scutellum as in foregoing species, but more broadly reddish behind, and with white tomentum. Abdomen as in preceding species, but with red lateral spots broader and more extensive; broad longitudinal stripes of white scales on each side of uniform breadth throughout, but more silvery; black hair on sides in distal half sparser; venter mainly red, only basal segments black at base. Legs as in foregoing species, but front tibiae distinctly yellowish; front coxae with dark hair, but also with whitish scales. Wings exactly as in preceding species, but more vitreous and not so yellowish at base; veins blacker; first posterior cell a little narrower at end; alula hyaline, with white fringe.

296. *Exoprosopa (Exoprosopa) latissima*, sp. nov.

A very small and entirely black species, with golden scales on the abdomen, and with hyaline wings, which have the first posterior cell much dilated at the end.

Type ♀, a solitary specimen from Nyasaland, Mt. Mlanje, 11 December, 1912 (*Dr. S. A. Neave*).

♀. Length of body 7 mm.; length of wing 6 mm.

Head black, with rather broadly yellow mouth borders; occiput moderately developed, with narrow postvertical furrow, yellow scales above, narrow shining white postocular band, and short pale yellowish central fringe; eyes with broad indentation and long bisecting line; frons at vertex thrice as broad as small ocellar tubercle, convex and rather shining towards middle, with short, erect black hair, and with shining white scales in front; face distinctly conical but not very prominent, with white scales and with white hair on sides below. Antennae short, entirely black; first joint short and black-haired; third joint shortly conical, as long as first two joints together, grey pollinose, with terminal style as long as itself. Proboscis black, slightly projecting; palpi dark yellowish, pale-haired. Thorax entirely black, with golden-yellow tomentum above, and entirely yellow collar and notopleural tufts; lateral stripes golden yellow; bristles black, long and strong; pleurae with yellowish hair above and whitish hair below; sternopleura with shining white scales; metapleural tuft pale yellowish. Scutellum entirely black, with golden-yellow tomentum, and with black bristles on hind border. Squamae dirty greyish, with white fringe; plumula white; halteres yellowish, with paler knobs. Abdomen entirely black, as broad as thorax, rather truncate behind, but with seventh segment triangular and pointed; dorsum of abdomen

apparently clothed mainly with golden yellow scales of uniform type; hair on sides whitish at base of abdomen, almost wanting towards middle and short and black at tip; spines on ovipositor dark yellow; venter black, with whitish scales and hair. Legs black (hind pair missing in case of type); front legs not much abbreviated, with smooth tibiae and almost bare tarsi; coxae clothed with whitish hair; middle femora without spines. Wings greyish hyaline, iridescent, with extreme base and costal cells pale yellowish; basal hook black; basal comb very small and reddish, with black bristles; veins black, with yellow bases; second longitudinal vein with broad but not deep terminal dip; marginal cross-vein recurrent; first posterior cell very broad at end, twice and more as broad at end as at base, and almost as broad as second posterior cell, which is narrow, with parallel sides, and forms a distinct angle with direction of discoidal cell; base of third posterior cell shorter than that of fourth; discoidal cell narrow, narrower than second basal cell, with almost parallel



FIG. 39.—*Exoprosopa chrySTALLINA*, sp. nov. Wing of ♀. $\times 12$.

sides, its terminal vein straight but rather oblique; middle cross-vein considerably before middle of discoidal cell, and opposite root of second longitudinal vein; anal cell rather widely open; axillary lobe short and broad; alula yellowish subhyaline, with pale yellowish fringe.

297. *Exoprosopa* (*Exoprosopa*) *chrySTALLINA*, sp. nov.

A small, black species, clothed abundantly with shining metallic scales, and with crystalline wings. *E. chrySTALLINA* is closely allied to *E. stupida*, Rossi, but distinguished by the possession of entirely pale yellowish wing-veins, a narrower body and less-developed spicules on the tibiae.

Type ♀, a solitary specimen, in poor condition and without a head, from Somaliland, Zaila, 22 May, 1895 (*Capt.*, now *Lt.-Col.*, C. G. Nurse). When examined by me, this specimen bore a label stating that it is near *E. vitreicosta* (*vitricosta*), Walker (*List Dipt. Ins. in coll. Brit. Mus.*, II, p. 251, 1849), a species of unknown provenance, and in the catalogues included among the synonyms of *E. stupida*, Rossi. Walker says that in his

species the wing-veins are tawny, but that the chest has in front "a thick band of pale yellow hairs," while in the present species the collar is quite white.

♀. Length of body 8 mm.; length of wing 7 mm.

Head wanting in case of type. Thorax entirely black, clothed with shining metallic scales, and adorned with a complete, rather broad, longitudinal stripe of white hairs on each side; collar entirely white above and on sides, but black beneath near front coxae; macrochaetae indistinguishable in case of type, but praesutural ones are black, while postalar ones are probably whitish as in *E. stupida*, Rossi; pleurae with whitish hair, sternopleura densely clothed with shining metallic scales; metapleural tuft whitish. Scutellum entirely black, clothed with shining metallic scales. Squamae white and white-fringed; plumula white; halteres pale yellowish. Abdomen elongate, as broad as thorax, with parallel sides, blunt at tip, entirely black, clothed with black, white and shining metallic scales; a broad complete band of white scales at base of second segment, last two segments apparently clothed mainly with white scales; hair on sides white on first segment, absent on remainder; last segment with fringe of dark scales; venter black, with white scales at base and in middle, and metallic scales at tip. Legs black, but front and middle tibiae more or less distinctly yellowish, at least towards base; front legs not much abbreviated, with smooth tibiae and thinly pilose tarsi; front coxae almost bare, as in *E. stupida*, but clothed with metallic shining scales; femora devoid of spines; tibiae with very short spicules; hind tibiae ciliated on outer side with short, bristly hairs of uniform length; claws short and black, with very small, but distinct basal tooth. Wings perfectly crystalline, even at base and in costal cells; basal hook pale yellowish; basal comb small, pale yellowish; veins entirely pale yellowish from base to tip, and disposed as in *E. stupida*, with discoidal cell of same characteristic shape, and much broader near base than at end; third posterior cell, however, much shorter than fourth, being only a little longer than second; alula whitish hyaline, with white fringe.

Genus 30. **HYPERALONIA**, Rondani (1863).

This genus is represented in the Ethiopian Region by a considerable number of species, although, so recently as 1886, it was stated by Osten Sacken (*Biol. Centr. Amer.*, I, p. 78) that no examples of it were yet known from the Cape. Loew, however, in his *Dipterenfauna Südafrikas*, p. 179, had already recorded five species with four submarginal cells as belonging to the African fauna. In my paper published in 1912, I gave the names of nine Ethiopian species of the present genus, one being described as new, and I divided them into two very distinct, natural groups. These groups are retained here, with the addition of a third for

the species with feathered hind legs, like *H. venus*, Karsch, which twelve years ago were unknown to me.

In the following table I give a characterisation of all the known Ethiopian species of *Hyperalonia*, and of the three groups into which they may be divided. It is necessary to remark that I have never seen specimens of *H. (Anthrax) monacha*, Klug (1832), *H. (Anthrax) erebus*, Walker (1849) or *Anthrax mara*, Walker (1849), which are known to me from figures or descriptions alone. *Anthrax rufa*, Wiedemann (1818), placed in the present genus by Miss Ricardo, is excluded from it in these pages, because, according to the original description, the species appears to belong, not to the Exoprosopinae at all, but to the Lomatiinae.

- 1 (30). Front tibiae smooth, or when exceptionally with some short spicules, wings mainly hyaline; hind legs not broadly feathered, or rarely with tibiae alone bearing sparse and narrow scales; abdomen devoid of spots of golden-coloured scales; wings rather broad and relatively short.
- 2 (15). Wings entirely blackish or brownish, with or without infuscated cross-veins; terminal vein of discoidal cell strongly S-shaped, as long as or a little shorter than vein dividing discoidal from third posterior cell; middle cross-vein usually on or beyond middle of discoidal cell (*H. nigripennis* group).
- 3 (6). Legs, antennae and palpi entirely deep black; frons and face with white scales in both sexes; middle cross-vein distinctly before middle of discoidal cell.
- 4 (5). Squamae black and black-fringed; wings uniformly blackened; frons in ♂ almost entirely clothed with broad patch of shining silvery scales. *niveifrons*, Bezzi.
- 5 (4). Squamae reddish-brown, with yellowish fringe; wings slightly infuscated, but infuscation more pronounced at base and along fore border; frons in ♂ with white scales on anterior half. *evanida*, Bezzi.
- 6 (3). Legs reddish or yellowish, or at least with similarly coloured tibiae, or with femora densely clothed with yellowish or reddish scales; frons with yellowish or reddish scales; squamae always reddish-brown with yellowish or reddish fringe; middle cross-vein on or beyond middle of discoidal cell.
- 7 (10). First and second joints of antennae black; wings altogether blackish, with but slightly developed metallic sheen, and with no infuscated cross-veins.
- 8 (9). Antennal style as long as third joint of antenna; thoracic and abdominal hair yellow; abdomen with stripe of golden tomentum on each side; palpi black; legs black, with femora densely clothed with yellowish scales, and with tibiae yellowish at base. *nigripennis*, Loew.
- 9 (8). Antennal style rudimentary, much shorter than third joint; thoracic and abdominal hair red; abdomen with stripe of red tomentum on each side; palpi reddish; legs quite red. *coleoptrata*, Bezzi.
- 10 (7). First and second joints of antennae red, like palpi; wings blackish-brown, or reddish-brown, with more or less developed metallic sheen, and with distinctly infuscated cross-veins.
- 11 (12). Discoidal cell truncate at base, cross-vein dividing it from second basal cell being short and nearly perpendicular; wings reddish-brown; occiput entirely red; abdomen red, with abbreviated median longitudinal black stripe. *vittata*, Ric.
- 12 (11). Discoidal cell acute at base, above-named cross-vein being longer and more oblique; wings darker brown or blackish; occiput with broad black postvertical spot above, or even entirely black; abdomen with broader black stripe, or mainly black.

- 13 (14). Wings dark reddish-brown; occiput red, with black spot above; abdomen red, with broad median longitudinal black stripe. *paris*, sp. nov.
- 14 (13). Wings blackish, with very conspicuous and beautiful purplish metallic sheen; occiput ochraceous rufous, postvertical region and central pit blackish; abdomen black (second segment at each lateral extremity with an ochraceous rufous patch in ground-colour), with on each side a uniformly broad and complete longitudinal stripe of golden tomentum, these stripes converging and only narrowly separated at distal extremity. *helenae*, Loew.
- 15 (2). Wings mainly hyaline, with more or less extensive dark pattern; terminal vein of discoidal cell short and straight, or very slightly curved, always much shorter than preceding vein; middle cross-vein before middle of discoidal cell (*H. sisypheus* group).
- 16 (21). Wings hyaline, with base and fore border narrowly yellowish or blackish, or with some infuscated cross-veins in basal half.
- 17 (18). Front tibiae beset with distinct spicules; hind tibiae with some scattered narrow scales; antennal style long, about as long as third joint of antenna; wings with narrow blackish base and blackish costal cells. *atricosta*, sp. nov.
- 18 (17). Front tibiae smooth; hind tibiae destitute of scale-like hairs; antennal style short, much shorter than third joint; wings with base and costal cells pale yellowish.
- 19 (20). Wings in both sexes hyaline, only base and costal cells yellowish or brownish; abdomen with cross-bands of yellowish tomentum on all segments. *sisypheus*, F.
- 20 (19). Wings with cross-veins in basal half infuscated, wings in ♀ also broadly infuscated on fore border; abdomen with complete cross-bands of shining white scales on second, sixth and seventh segments. *alula*, Bezzi.
- 21 (16). Wings with extensive dark pattern, or even dimidiate, or with more or less broad cross-bands.
- 22 (27). Wings more or less regularly dimidiate, and with second basal cell wholly infuscated; abdomen with cross-bands of white tomentum on third, sixth, and seventh segments.
- a (b). Legs red; axillary lobe of wings entirely hyaline. ... *virgo*, sp. nov.
- b (a). Legs black; axillary lobe more or less broadly infuscated, being included in fuscous basomarginal pattern.
- 23 (24). Wings regularly dimidiate, inner edge of fuscous area sharply defined, and extending obliquely from end of auxiliary vein to base of discoidal cell, and to middle of anal and axillary cells. *monacha*, Klug.
- 24 (23). Wings more broadly infuscated and not regularly dimidiate, fuscous area being less sharply defined and extending to ends of first submarginal, discoidal and anal cells.
- 25 (26). Under side of body clothed with bright ferruginous hair; legs with ferruginous hair. *erebus*, Walk.
- 26 (25). Under side of body and legs clothed with deep black hair. *transiens*, sp. nov.
- 27 (22). Wings not dimidiate, but with dark base, dark fore border and dark cross-band, second basal, anal and axillary cells being in great part hyaline; abdomen destitute of white cross-bands.
- 28 (29). Smallish or medium-sized species, with narrower dark cross-band on wings. *mara*, Walk.*
- 29 (28). Large species, with very broad, complete, middle cross-band on wings, separated from dark base by hyaline centres of second basal and anal cells. *thyridophora*, Bezzi.
- 30 (1). Front tibiae with distinct spicules; hind legs, even tarsi, broadly feathered; abdomen with broad patches of shining, golden-coloured scales; wings narrow and long, with extensive black pattern, with

* This species does not belong to the genus *Hyperalonia*, but to *Eroprosopa*.—E. E. Austen.

apical cross-vein of discoidal cell short and straight (much shorter than preceding vein), and with middle cross-vein before middle of discoidal cell (*H. venus* group).

- 31 (32). Wings black, with hyaline apex, very narrow hyaline hind border, and large oval hyaline spot in discoidal cell; under side of body clothed with deep black hair.
- a (b). Occiput red; discoidal cell entirely hyaline at end. *mars*, sp. nov.
- b (a). Occiput black; discoidal cell infuscated at end; hyaline hind border of the wings less distinct. *vulcanus*, subsp. n.
- 32 (31). Wings hyaline, with base, fore border and two cross-bands black, second basal and axillary cells being for most part hyaline; under side of body clothed mainly with white hair; occiput black; apex of wings dark in ♂, hyaline in ♀.
- 33 (34). Collar, notopleural and metapleural hair bright orange; venter from base to beyond middle (except part of lateral borders) clothed with white hair; wings with anal cell broadly hyaline in middle. *venus*, Karsch.
- 34 (33). Collar in part and notopleural and metapleural hair deep black; venter in middle alone with white hair; wings with anal cell entirely black. *cupido*, sp. nov.

Group 1. *H. nigripennis*.

The species comprised in this group are those that present the greatest difficulty. They agree in having relatively short and broad wings, and in the general characters of their venation, which shows a notable resemblance to that of *Litorrhynchus*, or of the subgenus *Defilippia* of the genus *Exoprosopa*. The shape of the discoidal cell is very characteristic, the half-way constriction being just below the middle cross-vein, and the upper portion of the distal extremity elongate, rounded and pointed at the tip. The tint of the wings, and the predominantly red colour of the body, antennae and legs are also characteristic, and are different from anything found in the species of the other two groups. The Ethiopian species belong to the section which includes very numerous Oriental forms, such as *H. tantalus*, Fabr., *H. leuconoe*, Jaenn., *H. oenomaus*, Rond., *H. chrysolampis*, Jaenn., etc., in which, however, the legs are deep black in colour, and the abdomen shows cross-bands of white scales.

298. *Hyperalonia niveifrons*, Bezzi (1914).

Very distinct from all the other species of the present group on account of its black antennae and legs, black and black-fringed squamae, and the frons and face being clothed with white scales.

My original description of this species was based on a small and entirely denuded specimen taken by Prof. F. Silvestri at Conakry, French Guinea. The British Museum possesses a well-preserved ♀ from S. Nigeria, Ibadan, 10 December, 1913 (*Dr. W. A. Lamborn*). The species is certainly allied to *H. nigripennis*, Loew; and since the latter seems to be an exclusively eastern form, I now think that the specimens from the Congo and N. Nigeria, referred to it by me in previous papers, perhaps

more properly belong here. Owing to the fact* that the description of the type ♂ (in my own collection) is very short, on account of the bad state of preservation of the solitary specimen available, I give below a more detailed description of the type ♀.

♀. Length of body 14 mm.; length of wing 16 mm.

Head deep black, with mouth borders narrowly yellowish; occiput strongly developed, with narrow postvertical furrow, reddish central fringe, and shining silvery white postocular band. Eyes with broad indentation, and long bisecting line. Frons at vertex about four times as broad as short, rounded, reddish-brown ocellar tubercle (in ♂ only thrice as broad as ocellar tubercle), densely clothed with short black hair, with scattered white scales on anterior half (frons in ♂ clothed with silvery scales, upper part alone in front of ocellar tubercle being black, and black hairs being entirely concealed beneath silvery scales). Face distinctly conical, but not very prominent, in middle and on upper mouth edge with short black hair, on sides below with longer whitish hair, entirely clothed with white scales. Antennae quite black; first joint short and black-haired; third joint elongate conical, but narrow at base, not or only a little longer than first two joints together, with long, thin terminal style of more than half its length. Proboscis black, not at all projecting; palpi black, pale-haired. Thorax entirely black, clothed on back with black hair and black scales, and with no distinct supra-alar stripe; hair in collar and notopleural tufts golden yellow; macrochaetae black, long and stout; pleurae clothed entirely with golden-yellow hair, even on metapleura; sternopleura without scales. Scutellum dark red, with black and black-scaled base, clothed with golden-yellow tomentum, and with black bristles on hind border. Squamae black and black-fringed; plumula golden yellow; halteres blackish, with paler knobs. Abdomen as broad as thorax, attenuated behind, black, with small red spots on sides of segments from second to fourth, concealed beneath fourrure; dorsum of abdomen clothed with black scales and hair, without cross-bands of white scales, only first and seventh segments having long, reddish-yellow tomentum and hair; on each side is a broad stripe of dense reddish hair, extending from base to tip, hair longer at base, and shorter and intermingled with black hairs at end; spines on ovipositor black, with reddish tips; venter deep black, with median stripe of yellowish tomentum and hair. Legs entirely deep black and clothed with deep black scales; front pair not much abbreviated, with tibiae smooth and tarsi beset with short but dense hair; front coxae with yellow hairs at base and black ones at end; spines and spicules well developed, black, on middle femora two or three, on hind femora a complete row of spines; claws black, with short, blunt basal tooth. Wings entirely infuscated, blackish, more deeply coloured at base and along fore border, with distinct but not very pronounced metallic

sheen; basal hook black; basal comb well developed and deep black; veins entirely black, second longitudinal vein with pronounced dip at end; marginal cross-vein short, straight and perpendicular; first posterior cell not much narrowed at end, as broad as, or a little broader than anal cell; second posterior cell not much narrower than third at end, vein between them rather straight; third posterior cell shorter than fourth at base; discoidal cell not indented above near middle cross-vein, its terminal vein S-shaped and horizontal, a little shorter than preceding vein; middle cross-vein distinctly before middle of discoidal cell; axillary lobe short and broad; alula black, with blackish fringe.

299. *Hyperalonia evanida*, Bezzi (1920).

Characterised by its entirely black legs, and by the very dense yellow hair on the sides of the abdomen.

Originally described by me (*Ann. Mus. Civ. Genova*, (3) IX, p. 112. 1920) from specimens collected in W. Africa by L. Fea: there is in the British Museum a ♀ specimen from Dahomey, Cotonou, 70 miles due W. of Lagos, 7 June, 1914 (*Dr. W. A. Lamborn*). The description of *H. (Anthrax) erebus*, Walker, from Sierra Leone, applies rather well to the present species; but since the head of the type is missing, it is impossible to say that the two are identical, especially in view of the fact that, as it stands, Walker's description is applicable to more than one species.

The British Museum also possesses a headless specimen of larger size, from Belgian Congo Lualaba R., 2,500–4,000 ft., 11 May, 1907 (*Dr. S. A. Neave*): this likewise belongs to some allied species of the present group.

300. *Hyperalonia nigripennis*, Loew (1852).

A medium-sized species, distinguished by golden-yellow thoracic and abdominal hair, black antennae, black femora densely clothed with yellow scales, and entirely blackish wings, which have no infuscated cross-veins.

H. nigripennis, Lw., was originally described from a specimen from Mozambique, and has never actually been recorded again; as stated above, records of its occurrence previously published by me were due to misinterpretation. I now think, however, that I have a true specimen of the present species before me in a ♀ belonging to the British Museum, taken in Zanzibar Town, 29 December, 1910 (*Dr. W. M. Aders*). The third antennal joint is shortly conical, not longer than the first two joints together, and terminated by a thin style, which is as long as, or a little longer than the third joint itself; palpi black and black-haired. Thoracic macrochaetae black, long and stout; squamae reddish-yellow, with wide fringe of broad, wavy, golden-coloured scales; metapleural tuft entirely golden yellow. Spines on ovipositor

shining reddish. Front legs abbreviated, with smooth tibiae and thinly pilose tarsi; front coxae clothed with black hairs, and with yellow hairs at base; spines on femora and tibiae black and well developed; tibiae yellowish, with more or less broad black tips; claws black, with short, blunt basal tooth. Wings with black hook; basal comb black, clothed with golden-yellow tomentum; venation as in preceding species, but middle cross-vein on middle of discoidal cell, and second posterior cell as broad as third at end, vein between them being nearly straight.

301. *Hyperalonia paris*, sp. nov.

Very nearly allied to and closely resembling a small form of *H. vittata*, Ric., but differing in the discoidal cell being more elongate and acute at the base.

H. paris is described, from a specimen from Erythraea, in my memoir on the Bombyliidae of the Museum at Budapest. There are in the British Museum a couple of examples from Kenya Colony, October, 1911 (*R. J. Stordy*); a ♂ from S. Nigeria, Ibadan, 7 December, 1913 (*Dr. W. A. Lamborn*) also seems to belong here.

302. *Hyperalonia helena*, Loew (1854).

Of this magnificent species, one of the most striking of its genus, the types were obtained in Nubia. *H. helena* is represented in the British Museum by a solitary ♀ from Erythraea, Arkiko, near Massowa (*J. K. Lord*), which is the type of *Exoprosopa gloriosa*, Walker (1871).

Group 2. *H. sisypus*.

The species belonging to this group differ from those of the preceding one, which they resemble in their general facies, in the wings being narrower and the body and legs redder; the wings too are hyaline, sometimes without any dark pattern or with a much-reduced one, but in other cases with well-developed markings, including broad cross-bands. The venation is very different from that in the preceding group, the discoidal cell being more regular in shape, with almost parallel sides, and rather blunt or narrowing somewhat abruptly at the end, its terminal vein being straight, less oblique, and much shorter than the preceding vein; the vein between the second and third posterior cells is usually straight.

Of the Oriental species known to me, *H. doryca*, Boisd., although agreeing with the *H. tantalus* group in general facies and abdominal markings, shows a venation very like that of the present group.

303. *Hyperalonia atricosta*, sp. nov. (syn. *H. sisypus*, Bezzi (1912), *nec* Fabr.).

A very well-differentiated species near *H. sisypus*, Fabr., but at once distinguished by the base of the wing and the costal

cells being blackish instead of pale yellowish, and by the hind tibiae being provided with narrow, scattered black scales.

On account of its spiculose front tibiae, and the presence of narrow, sparse scales on the hind tibiae, this species may be considered as forming a connecting link between the present and the *H. venus* group.

In my paper of 1912 (*Trans. Ent. Soc., London*, 1912, p. 654), this species was wrongly determined by me as *H. sisypheus*, on the strength of specimens in the British Museum from N. Nyasa (*Dr. J. B. Davey*); in the same collection there are likewise examples of both sexes of *H. atricosta* from S. Nyasa, Fort Johnston, 12 June, 1910 (*Dr. A. H. Barclay*).

♂♀. Length of body 8–12 mm.; length of wing 9–13 mm.

Head black, with face and mouth borders reddish; eyes and occiput as in *H. niveifrons*, Bezzi, occiput with narrow postocular band of dead-white tomentum; frons at vertex thrice as broad as ocellar tubercle, about equal in both sexes, clothed with erect black hair and with yellowish scales in front; face short,



FIG. 40.—*Hyperalonia atricosta*, sp. nov. Wing of ♂. × 7.

conical, but only moderately prominent, clothed entirely with black hair, which forms a dense tuft on upper mouth edge, and with yellowish scales. Antennae entirely black; first joint black-haired; third joint conical, a little longer than first two joints together, tapering into a short point, bearing a thin style more than half as long as joint itself. Proboscis black, not, or only slightly projecting; palpi black, dark pilose. Thorax entirely black, with black hair and yellowish tomentum on back; collar entirely yellow, like notopleural tufts, above which there are, however, some bristly black hairs; yellowish supra-alar stripes distinct; macrochaetae black, long and strong; pleurae with pale yellowish hair, lighter below, with some black hairs in middle of mesopleura; sternopleura without scales; metapleural tuft pale yellowish or whitish. Scutellum dark red, with black and black-scaled base, clothed with yellowish tomentum and with black bristles on hind border. Squamae dirty whitish, with white fringe; plumula white; halteres dark, with knobs paler above. Abdomen entirely black, oval, but rather blunt at tip, a little narrower than thorax; dorsum of abdomen clothed with black and pale yellowish scales, latter forming cross-bands at

base of second, third, fourth and fifth segments, and covering almost whole of sixth and seventh segments, on which and on sides scales are more whitish; hair on sides much longer than usual, white from base to third segment, mainly black elsewhere. Genitalia black, clothed with short black hair; venter clothed with white tomentum and with long whitish hair; spines on ovipositor reddish. Legs entirely black, with black scales and black spines; front pair abbreviated, tibiae with short but distinct spicules on outer side at base, tarsi with short but erect and rather stiff hair; front coxae black-haired; middle femora without, hind femora with four or five spines; spicules on tibiae long, hind tibiae in addition with some scattered, long and narrow, black scales, chiefly on outer side; claws black, with small, blunt tooth. Wings short and rather narrow, hyaline and iridescent, blackish pattern being confined to extreme base, costal and subcostal cells, and base of first basal cell; cross-veins without fuscous edging; basal hook and basal comb black, latter with sparse yellowish scales. Veins black; terminal dip in second longitudinal vein of only moderate depth; marginal cross-vein short and straight; first posterior cell broadly open, about twice as broad as the anal cell; second posterior cell broader at end than at base, about as broad as third posterior cell, vein between them being straight; third posterior cell shorter than fourth at base; discoidal cell regular in shape, with almost parallel sides, distal two-thirds distinctly narrower than remainder; terminal vein of discoidal cell short, straight, and but moderately oblique, thrice as short as preceding vein; middle cross-vein considerably before middle of discoidal cell; axillary lobe long; alula subhyaline, with whitish fringe.

304. *Exoprosopa sisypus*, Fabricius (1805).

An elongate species, with conical abdomen exhibiting cross-bands of yellowish tomentum of uniform depth on all segments, and entirely whitish hair on the sides; readily distinguishable owing to its hyaline, immaculate wings, which have only the base and fore border narrowly pale yellowish.

This is the true Fabrician *Anthrax sisypus*, the type of which was obtained in Guinea, although the range of the species evidently extends right across the African continent.

The following are the data with reference to the specimens of this species in the British Museum:—one ♂, Gold Coast, Accra, 28 June, 1908, "caught over grass, 6 p.m." (*Dr. W. M. Graham*); one ♂, one ♀, Abyssinia, November, 1911 (*R. J. Stordy*); one ♂, Kenya Colony, Maziwa Mitatu or Maungu, between 14 March and 4 April, 1897 (*C. S. Betton*); one ♀, Kenya Colony, on Uganda Railway, near M'tito Andei, 6 January, 1912 (the late *Capt. F. C. Selous, D.S.O.*); and one ♂, Kenya Colony, Masai Reserve, 26 April, 1913 (*T. J. Anderson*).

A redescription of *H. sisypus*, based on a study of the extensive

series of specimens of the species in the Budapest Museum, will be found in my memoir on the Bombyliidae belonging to that Institution.

305. *Hyperalonia alula*, Bezzi (1906).

Allied to the preceding species, but distinguished by the cross-veins in the wings being infuscated, and by the presence of deep silvery cross-bands on certain abdominal segments.

Described originally from a ♂ and ♀ from Erythraea: the British Museum possesses a typical ♀ from Abyssinia, November, 1911 (*R. J. Stordy*).

306. *Hyperalonia virgo*, sp. nov.

Allied to *H. monacha*, Klug, but distinguished by having red legs, by the tip of the abdomen not being silvery, and by the infuscated area in the wings being narrower, the axillary lobe being quite hyaline.



FIG. 41.—*Hyperalonia virgo*, sp. nov. Wing of ♀. × 6.

Type ♀, a solitary specimen from Kenya Colony, Masai Reserve, 14–17 January, 1914 (*Capt. A. O. Luckman*).

♀. Length of body 12 mm.; length of wing 14 mm.

Head black, with mouth borders and sides of face yellow; postocular band dirty whitish, not at all shining; frons at vertex about four times as broad as ocellar tubercle, with erect black hair, and with whitish scales in front; face conical, clothed with whitish scales and yellowish hair, and moreover with small median tuft of black hair on upper mouth edge; antennae black, first joint black-haired (third joint wanting in case of type); proboscis black, not projecting. Thorax black, but densely grey dusted on pleurae, with pale yellowish hair in collar and on sides, and bearing black macrochaetae; hair on breast and in metapleural tufts pale yellowish or even whitish. Scutellum black, with dark red spot on posterior half, and with black bristles on hind border. Squamae dirty whitish, with whitish fringe; halteres yellowish. Abdomen (denuded in case of type) entirely black; hair on sides pale yellowish, at base even whitish; venter black, clothed with whitish hair; spines on ovipositor reddish. Legs reddish, only terminal joints of tarsi

being black; front tibiae short and smooth; front tarsi with soft pubescence; hind femora with complete row of black spines below. Wings long, with reddish-brown basal comb and reddish veins, which become blackish towards distal extremities. Second longitudinal vein with shallow dip at end; first posterior cell somewhat narrowed at end; discoidal cell acute outwardly, its terminal cross-vein fairly straight but oblique; second posterior cell narrow and long, with parallel sides; discal cross-vein on middle of discoidal cell or slightly before it; axillary lobe broad; alula pale yellowish, with whitish fringe. Wing-pattern dimidiate in character, inner margin of fuscous area running obliquely and somewhat sinuously from end of subcostal cell, across base of first posterior and of discoidal cell, to base of anal cell and to alula, axillary lobe being quite hyaline; second basal cell completely infuscated, with greyish, not very distinct, praediscoidal spot.

307. *Hyperalonia transiens*, sp. nov.

A black, medium-sized or smallish species, with an interrupted cross-band of whitish tomentum on the third abdominal segment, and with dimidiate wings.

Type ♂, type ♀, and an additional ♀ from N.-W. Rhodesia, Chilanga, 18-19 September, 1913, "on path" (R. C. Wood); a third ♀ from N. Rhodesia, Feira, 10 June, 1911 (F. V. Bruce-Miller).

The present species seems to be allied to the Arabian *H. monacha*, Klug, in which, however, the wings are exactly dimidiate and the inner margin of the infuscated area is sharply defined. *H. transiens* is also allied to *H. (Anthrax) erebus*, Walk., the type of which was taken in Sierra Leone, but is distinguished by the absence of ochraceous tomentum on the sides of the dorsum of the abdomen; by the legs being black, instead of having the femora and tibiae yellow (at least in the case of the hind pair); and by the wings being more hyaline at the tip and on the hind border, and having a more distinct praediscoidal spot.

♂♀. Length of body 10-12 mm.; length of wing 10-12 mm.

Head black, with very narrow or even indistinct yellowish mouth borders; occiput with broad, deep, Y-shaped postvertical furrow, yellowish central fringe, and broad postocular band of white tomentum. Eyes with broad, shallow indentation, and long bisecting line. Frons at vertex in ♂ thrice, in ♀ four times as broad as small, black ocellar tubercle, clothed in both sexes with erect black hair, and with scattered white scales in front; face short, bluntly convex, not conical, clothed entirely with black hair (rather dense on mouth borders), and with scattered white scales. Antennae entirely black; first joint short and black-haired; third joint elongate conical, linear, more than twice as long as first two joints together, with pale coloured style, not longer than one-third of joint itself. Proboscis short

and thick, not at all projecting, black like the palpi. Thorax entirely black, clothed on back with black hair and yellowish tomentum; collar and notopleural tufts composed of long and dense, entirely pale yellowish hair, but above notopleural line there is rather dense black hair; no distinct lateral stripes; macrochaetae black, long and strong; pleurae and breast clothed with deep black hair, only metapleural tuft and hair on upper part of meso- and pteropleura being pale yellowish, more broadly in ♀. Scutellum dark red, with black and black-scaled base clothed with yellowish tomentum and with black bristles on hind border. Squamae pale reddish-brown (dirty whitish against a light background), with dirty white fringe; plumula white; halteres with brown stalks and whitish knobs. Abdomen with parallel sides, truncate at end, not broader than thorax, entirely black in ♀, with sides narrowly red in middle and with red tip in ♂; dorsum of abdomen clothed with black hair and scales, but third segment with deep cross-band of white scales, broadly interrupted in middle, and last two segments entirely clothed with white scales; second tergite also with small patch of white scales at each lateral extremity; hair on sides whitish, dense and long from base to third segment, black and relatively long elsewhere. ♂ genitalia red, clothed with black hair; spines on ovipositor shining red; venter clothed from base to beyond middle with white scales and white hair. Legs black (ground-colour of tibiae dark reddish-brown), clothed with black scales and spines; front legs somewhat abbreviated, with black pilose coxae, smooth tibiae and thinly pilose tarsi; middle femora with two or three, hind femora with numerous spines, forming a complete row; hind tibiae on basal half with some long and narrow, dark scales among spicules; claws black, with indistinct blunt protuberance at base. Wings rather short and not very broad, infuscated from base to beyond two-thirds of their length, but inner margin of infuscated area not sharply defined; marginal, first submarginal and first posterior cells infuscated about to base of cubital fork; discoidal cell infuscated above to end, but below with broad subhyaline spot occupying more than its terminal half; third and fourth posterior cells infuscated at base; anal and axillary cells infuscated to about their distal extremities; praediscoidal spot broad, whitish-grey; the hyaline part of wings distinctly greyish. Basal hook and basal comb black, latter with yellowish tomentum; veins black; terminal dip in second longitudinal vein well developed; marginal cross-vein short, straight and perpendicular; first posterior cell narrowed at end; second posterior cell long, as broad as third posterior cell at end, vein between them moderately curved; third posterior cell very long and narrow at base, which is only a little shorter than that of fourth. Discoidal cell short and regular in shape, narrower than and about as long as second basal cell, with parallel sides and fairly blunt at end, its terminal

vein being short, straight, not very oblique, and much shorter than preceding vein; middle cross-vein near middle of discoidal cell. Axillary lobe long; alula fuscous, with dark fringe.

308. *Hyperalonia thyridophora*, Bezzi (1912).

A stoutly built species of large size, resembling members of the following group, but at once distinguished by the hind legs not being feathered, by the front tibiae not being spiculate, and by the wings having the discoidal cell infuscated to its distal extremity.

In addition to the type—a headless ♀ from Nyasaland, Dowa (Dr. J. E. S. Old), the British Museum possesses a well-preserved specimen of the same sex from Portuguese East Africa, E. of Mt. Mlanje, 3-7 October, 1913 (Dr. S. A. Neave). With this specimen before me, I will complete my original description (Trans. Ent. Soc. London, p. 653, Pl. L, fig. 26. 1912).

♀. Length of body 19 mm.; length of wing 21 mm.

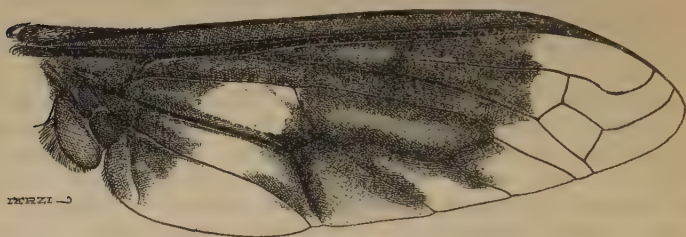


FIG. 42.—*Hyperalonia thyridophora*, Bezzi. Wing of ♀. × 4.

Head black, with face dark reddish below, and mouth borders pale yellowish. Occiput very convex and broad, clothed above with short black hair, and with broad postocular band of white tomentum; postvertical furrow Y-shaped, broadened behind, deep and broad; eyes with indentation of moderate depth, but with long bisecting line; occipital central fringe whitish. Frons at vertex somewhat excavated, four times as broad as low, oval, black ocellar tubercle, clothed with erect black hair, and with narrow whitish scales in front; face broadly rounded, bluntly convex, not conical, with dense whitish scales and with short whitish hair on sides below; no black tuft on upper mouth edge. Antennae black, first joint dark red, rather short and clothed with black hair; third joint very elongate, linear, gradually tapering to a point, more than twice as long as first two joints together, with terminal style of only one-fourth of its length. Proboscis thick, black, considerably shorter than mouth opening, with short, broad labella; palpi black and black-haired. Abdomen with hair on sides entirely whitish or pale yellowish as far as sixth segment; third, sixth and seventh segments apparently with cross-bands of whitish tomentum. Ground-colour of legs

apparently dark reddish in case of femora also, concealed beneath dense black scales; front legs abbreviated, with coxae clothed entirely with yellowish hair, smooth tibiae, which have only a few indistinct hairs at base on outer side, and short and thinly pilose tarsi; femora with numerous spines; hind tibiae with relatively short spicules and devoid of scales, or only with a few narrow scaly hairs on basal half. Wings with black basal hook; at root of costa a conspicuous tuft of whitish hair; axillary lobe short and broad; alula infuscated, with darkish fringe.

Group 3. *H. venus*.

The present group contains the most conspicuous Ethiopian species of Exoprosopinae, and probably the most beautiful of all African Diptera. The species are recognisable at once by their long, narrow wings, adorned with a peculiar and extensive dark pattern, in which the discoidal cell is always hyaline, in its distal two-thirds. Members of the group are further characterised by the possession of: a long and narrow discoidal cell, the terminal vein of which is very short, straight and only moderately oblique; front tibiae beset with spicules, and hind legs feathered throughout, even including the tarsi, with long scales; and, lastly, conspicuous patches of golden scales on the abdomen, arranged in a triangle, two being basal and one apical. There is also a sexual dimorphism in the wing-pattern, at least in the case of two out of the three known species, the apex being almost entirely infuscated in the ♂, and broadly hyaline in the ♀; the supernumerary submarginal cell, which is characteristic of the genus, is, however, completely infuscated in both sexes.

The geographical range of the members of this group seems to be confined to the east, no species being at present known from either West Africa or the Cape.

309. *Hyperalonia mars*, sp. nov.

A handsome, stoutly-built fly, distinguished by a red head, collar and notopleural tufts of bright red hair, an entirely black ventral surface to the body, and especially by its black wings, which have the apex hyaline, the centre of the hind margin narrowly hyaline, and a large oval, hyaline median spot, occupying the greater part of the discoidal cell.

Type ♂, type ♀, and a number of other specimens of both sexes from Nyasaland, Mt. Mlanje, 18 November, 1912, and Portuguese E. Africa, E. of Mt. Mlanje, 3-7 October, 1913 (*Dr. S. A. Neave*); two other examples from Portuguese E. Africa, Port Amelia (*F. V. Beste*); and a ♂ from Natal, Umfuli R., October, 1895 (*Dr. G. A. K. Marshall, C.M.G., F.R.S.*).

The present, very remarkable species, exhibits an undeniable resemblance to the South American *H. morio*, Fabr., and its

allies, in which, however, the hind legs are not feathered and the abdomen has no golden spots, while the wings show more numerous hyaline spots in the centre.

♂♀. Length of body 12-19 mm.; length of wing 17-23 mm.; wing-expanse 38-50 mm.

Head entirely dark red, a little paler posteriorly; occiput strongly developed, with deep postvertical furrow, which is broadened behind, and with scattered white scales, forming a dense and broad postocular band; central fringe whitish, bordered above with shorter black hairs. Eyes with indentation of moderate depth, but with long bisecting line. Frons of about equal breadth in both sexes, three or four times as broad as red ocellar tubercle, clothed with erect black hair and with white scales on anterior half. Face bluntly convex, rounded, with scattered white scales, with black hairs in centre above, on upper mouth edge, and with whitish hair on sides below; mouth borders narrowly yellowish. Antennae with first and second

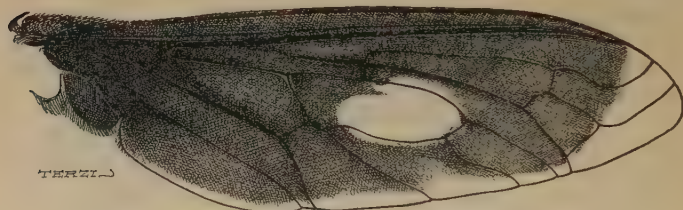


FIG. 43.—*Hyperalonia mars*, sp. nov. Wing of ♂. $\times 3\frac{1}{2}$.

joints dark red, and densely clothed with black hair; third joint narrowly conical, a little shorter than first two joints together, with terminal style of about half its length, or a little shorter. Proboscis black, thick and short, as long as mouth opening; palpi black, dark-haired. Thorax broad and subgraduate, clothed on back with black scales and with some black hairs; notopleural tufts and upper part of collar bright red, hair on sides, and also supra-alar stripe, deep black; macrochaetae black, long and stout; hair on pleurae and breast, as also metapleural tuft, entirely deep black. Scutellum dark red, black at base and on margin clothed entirely with black scales, and with black bristles on hind border. Squamae deep black, and black fringed; plumula black; halteres black, with greyish knobs. Abdomen broadly oval, even a little broader than thorax, somewhat pointed behind, entirely black, or with narrow, dark reddish spots on sides of second segment; dorsum of abdomen clothed, with deep black scales, but on each side of second segment is a conspicuous, broad, rounded spot of shining, golden-coloured scales; a third, more elongate spot of similar scales is situate at tip of abdomen, in centre of sixth and seventh segments; these spots apparently equally developed in both sexes; hair

on sides entirely deep black from base to tip, but rather short beyond second segment; venter entirely deep black, clothed with black scales and black hair; ♂ genitalia black, dark reddish at end, and clothed with black hair; spines on ovipositor shining red. Legs entirely black, with black scales and spines; front legs somewhat abbreviated, with entirely black-haired coxae, tibiae beset with rather thin but distinct spicules, and tarsi clothed with short hair; middle femora with three or four spines; hind legs densely feathered with long black scales, which are present on both sides on apical half of femora, and very numerous and long on both sides of tibiae, and on upper side of first two joints of tarsi; claws black, with short, blunt protuberance at base. Wings long, and relatively narrow, uniformly black, with following hyaline spaces: (a) apex, beyond a more or less curved line running from end of first longitudinal vein to that of lower branch of cubital fork, extreme end of marginal cell being hyaline, but *Hyperalonia*-submarginal cell entirely, or almost entirely infuscated; (b) a very narrow hind border, extending from end of first posterior cell to that of anal cell, latter being entirely infuscated, (c) a large, regularly oval spot, occupying whole of discoidal cell, except its base, and encroaching slightly on basal portions of first and third posterior cells. No apparent difference between sexes as regards extent of hyaline areas in wing, except that in ♂ hyaline hind border seems broader than in ♀. Basal hook and basal comb deep black. Veins black; terminal dip in second longitudinal vein of moderate depth; marginal cross-vein short, straight and perpendicular; *Hyperalonia* cell subquadrate; first posterior cell narrowed at end, but twice as broad as anal cell at tip; second posterior cell very narrow throughout, half as broad as third, which is contracted at base and a little shorter than fourth posterior cell. Discoidal cell elongate, its upper and lower veins gently curved outwards, its terminal vein short, straight and oblique, only one-fourth of length of preceding vein, which is of a flattened S-shape; middle cross-vein considerably before middle of discoidal cell; anal cell narrowly open; axillary lobe proportionally narrow; alula black, with blackish fringe.

310. *Hyperalonia mars*, Bezzi, subsp. *vulcanus*, subsp. nov.

Agreeing generally with the preceding as regards external details, but differing in the colour of the occiput and in some minor features of the wing-pattern.

Type ♂ from Portuguese East Africa, E. of Mt. Mlanje, 3-7 October, 1913 (*Dr. S. A. Neave*).

♂. Length of wing 11 mm.; length of wing 15 mm.

The differences from the typical form are as follows:—

(1) Occiput entirely shining black, not red, and vertex, to just in front of ocellar tubercle, blackish-brown;

(2) discoidal cell infuscated (having a narrow, brownish

blotch) at distal extremity, a feature entirely wanting in all specimens of typical *H. mars* examined;

(3) hyaline hind border of wing indistinct, indicated only by a very narrow subhyaline stripe, occupying distal extremities of third and fourth posterior cells (in *H. mars* ♂ this hyaline hind border is rather broad and well marked).

Representatives of this subspecies probably vary in size, as do those of the typical form of *H. mars*; if, however, the dimensions exhibited by the specimen described above are constant, the subspecies is much smaller than the typical form.

311. *Hyperalonia venus*, Karsch (1887).

A large and extremely handsome fly, distinguished by the bright orange colour of the hair forming the collar and the notopleural and metapleural tufts, by a large area at the base of the

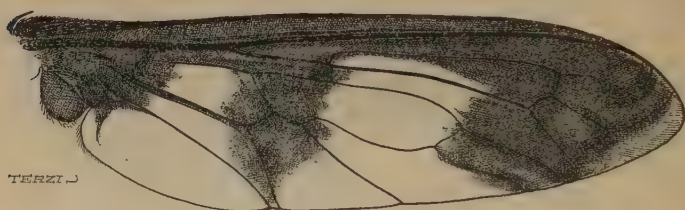


FIG. 44.—*Hyperalonia venus*, Karsch. Wing of ♂. $\times 3\frac{1}{2}$.

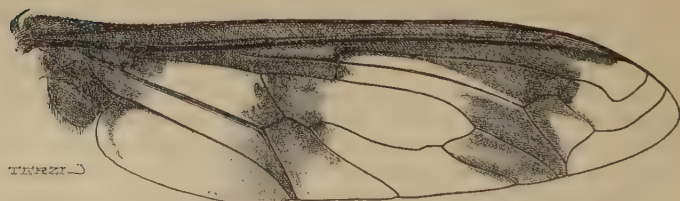


FIG. 45.—*Hyperalonia venus*, Karsch. Wing of ♀. $\times 3\frac{1}{2}$.

venter, and a band crossing the pleurae and pectus being clothed with silvery-white hair, and by the very long, narrow wings, which have the anal cell almost entirely hyaline, while the apex is almost completely infuscated in the ♂, and hyaline in the ♀.

Originally described from three ♀♀ from Zanzibar and Usambara, Tanganyika Territory, the species was subsequently redescribed by Dr. Speiser from both sexes from Amboni, Tanganyika Territory. *H. venus* seems to be not uncommon in Nyasaland and East Africa, from Kenya Colony to Zanzibar. In addition to a series of specimens from Nyasaland, the British Museum possesses a number of ♂♂ from Kenya Colony, Moyale, 12 October, 1911. and Camp Kalumja, 4 October, 1911 (*R. J.*

Stordy); a ♂, also from Kenya Colony, M'tito Andei, 2,500 ft., 26-28 March, 1911 (*Dr. S. A. Neave*); and another ♂ from Mombasa (*D. J. Wilson*).

Length of body 15-20 mm.; length of wing 20-25 mm.; wing-expanse 44-55 mm.

Head and its appendages as in preceding species, but black, only frons being broadly dark reddish towards middle; sides of face densely clothed with shining white scales. Thorax with distinct supra-alar stripe of yellow hair; hair on pleurae silvery-white, only notopleural and metapleural tufts being bright orange; macrochaetae black; squamae black, with yellow fringe; plumula yellowish. Hair on sides of abdomen white from base to fourth segment, black and shorter elsewhere; ♂ genitalia black and black-haired; spines on ovipositor shining red; golden patches on dorsum much broader than in preceding species. Coxae with long, silvery-white hair; front tibiae with distinct spicules; front tarsi thinly pilose; hind legs as in preceding species, but feathering of femora less developed, while in tarsi even third and fourth joints are feathered; claws with short, blunt, basal tooth. Wing-markings very characteristic owing to sexual dimorphism; first dark band connected with black area at base by black fore border (frequently also by a narrow infuscated edging to fifth longitudinal vein), second basal cell being broadly hyaline in middle, and anal cell almost entirely hyaline, only narrowly infuscated at base and tip; axillary lobe quite hyaline. Basal hook and basal comb black. Veins black, third longitudinal vein partly yellowish, like other veins in middle hyaline band. Alula black, with dark fringe; axillary lobe long and narrow; venation identical with that of preceding species.

312. *Hyperalonia cupido*, sp. nov.

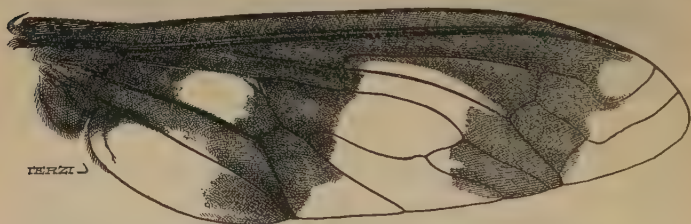
A pretty species, closely allied to the foregoing, but at once distinguished by the presence of black hair on the sides of the thorax, by the silvery hair on the venter being confined to the middle, and by the wings, which are distinctly broader, and have the anal cell entirely infuscated, and the axillary lobe broadly infuscated at its distal extremity.

Type ♂, type ♀, and an additional specimen of each sex from Nyasaland, Mt. Mlanje, March, 1913 (*Dr. S. A. Neave*); one ♂, Nyasaland Protectorate (precise locality unknown), 1909 (*Dr. J. B. Davey*); three ♀♀, Nyasaland Protectorate, L. Nyasa, Monkey Bay, February, 1910 (*H. N. Tate*); one ♂, one ♀, Nyasaland (precise locality unknown), 1911 (*Dr. J. E. S. Old*); one ♀, Nyasaland (*Dr. R. Drummond*); and one ♂, Nyasaland, Ruu Valley, 4 March, 1913 (*Dr. S. A. Neave*).

♂♀. Length of body 10-16 mm.; length of wing 16-21 mm.; wing-expanse 35-46 mm.

Head black, even in middle of frons, or there sometimes with

narrow, dark red cross-band; shape and covering of head as in preceding species. Thorax also as in latter, but hair in notopleural and metapleural tufts deep black, and scales distinctly bluish-black, at least posteriorly, in front of scutellum; hair forming collar pale yellowish in front, black behind; pleurae partly black-haired, silvery hair forming only perpendicular stripe across meso- and sternopleura; squamae black, with black fringe; plumula whitish; halteres black, with knobs greyish below. Scutellum almost entirely black, with trace of dark reddish-brown towards middle, bluish-black scales, and black bristles on hind border. Abdomen as in preceding species and marked in much same manner, but with following differences; black hair on sides beginning on hind border of second segment, and longer; lateral patches of golden scales deeper in colour, those on second segment broadly separated in middle, instead of forming complete transverse band as in *H. venus*; apical patch of same breadth as in *H. venus*, occupying whole of sixth and



[FIG. 46.—*Hyperalonia cupido*, sp. nov. Wing of ♀. $\times 4$.

seventh segments, instead of being confined to centre, as in *H. mars*; venter clothed with black hair, showing only a median basal longitudinal stripe of white scales and white hair, not extending beyond middle; genitalia as in preceding species. Legs likewise as in latter but coxae only at base with white hair, and clothed at tips with black hair; hind femora more broadly feathered on apical half; hind tarsi with only first joint broadly feathered above. Wings as regards markings resembling those of preceding species, but distinctly shorter and broader; pattern as in foregoing and with same sexual dimorphism at apex, but with following, very notable differences: basal dark band of more or less uniform breadth, and, at least in ♀, reaching hind border without attenuation or becoming indistinct, axillary lobe being as a rule broadly infuscated at apex; moreover this band, besides being connected with black base by means of fore border, is also united with base through a black stripe filling whole of anal cell, from base to tip; hyaline spot in second basal cell smaller than in *H. venus*, being as broad as long and usually having its angles rounded off, while in *H. venus* it is longer than broad, and of a rectangular shape; hyaline middle band resting

on hind border distinctly narrower, discoidal cell being more broadly infuscated at base; lower basal angle of second posterior cell broadly or narrowly hyaline, while in *H. venus* it is infuscated. Venation as in *H. venus*, but veins entirely black; axillary lobe shorter and broader; alula black and with black fringe.

INDEX

OF GENERA AND SPECIES

- abdominalis* (*Sisyrophanus*), 19, 84, 86
abruptus (*Thyridanthrax*), 22, 194, 202
Acrodisca, 22, 228, 234
acroleucus (*Bombylius*), 18, 33
acropila (*Exoprosopa*), 23, 281
acutangula (*Lomatia*), 21, 142, 143
acutus (*Bombylius*), 18, 47
Adelidea, 12, 19, 25, 100
adelpha (*Exoprosopa*), 276
aeacus (*Exoprosopa*), 276
aegina (*Exoprosopa*), 24, 283, 331
afer (*Thyridanthrax*), 199
afra (*Henica*), 20
afra (*Nomalonia*), 20, 136
alatus (*Thyridanthrax*), 22
albata (*Exoprosopa*), 23, 282, 323
albescens (*Villa*), 21, 182, 183
albicans (*Eurycarenum*), 19, 79, 82
albidus (*Systoechus*), 19, 63, 68
albifacies (*Geron*), 20, 113
albiventris (*Bombylius*), 18
albofimbriata (*Exoprosopa*), 23, 280, 308
albonigra (*Exoprosopa*), 24, 284, 349
algira (*Exoprosopa*), 244, 245
allothyris (*Litorrhynchus*), 214, 227
Alonipola, 20
alula (*Hyperalonia*), 24, 362, 369
ambustus (*Bombylius*), 36
Amictus, 14
analis (*Bombylius*), 18, 31, 32, 33, 36
Anastoechus, 12, 19, 25, 72
anceps (*Corsomyza*), 19, 105, 106
ancilla (*Exoprosopa*), 24, 285, 356
angulata (*Exoprosopa*), 22, 235, 236, 239
angulosus (*Bombylius*), 18
angusta (*Exoprosopa*), 23, 280, 302
anomala (*Adelidea*), 19, 100
Anthracamoeba, 167
ANTHRACINAE, 10, 15, 158
anthracoides (*Tomomyza*), 20
Anthrax, 15, 21, 28, 158
anthrax (*Anthrax*), 162
Antonia, 14, 21, 27, 136
Antoniaustralia, 15, 136, 140
anus (*Exoprosopa*), 24
Apatomyza, 13, 20, 26
Apheobantus, 15, 21, 27, 149
apicalis (*Exoprosopa*), 23, 273
Apolysis, 13, 20, 36
appendiculata (*Petrorossia*), 151
appendiculatus (*Anthrax*), 159
appendiculatus (*Bombylius*), 18
archimedeia (*Exoprosopa*), 245
arcuata (*Exoprosopa*), 23, 251, 266
arenacea (*Exoprosopa*), 277
argentatus (*Bombylius*), 18, 37, 38
argentifer (*Bombylius*), 18, 60
argentifrons (*Thyridanthrax*), 22
argenteilatus (*Thyridanthrax*), 22
argentina (*Villa*), 21, 182
Argyramoeba, 158, 167, 172
argyrolepis (*Litorrhynchus*), 22, 213, 224
argyrophora (*Exoprosopa*), 23, 281
argyropygus (*Anthrax*), 159
argyropygus (*Dischistus*), 96
Argyropsila, 229, 274
ater (*Bombylius*), 30, 31
atricosta (*Hyperalonia*), 24, 362, 366
atrinasis (*Exoprosopa*), 24, 284, 343
atrisquama (*Villa*), 21, 182, 187
attenuatus (*Systropus*), 20
aurantiacus (*Bombylius*), 18
aurata (*Lomatia*), 21
auricomus (*Bombylius*), 18, 38, 44
aurifluus (*Dischistus*), 19, 89, 90
aurocincta (*Villa*), 22
aurulans (*Exoprosopa*), 23, 282, 322
austeni (*Systoechus*), 19, 64, 71
autumnalis (*Systoechus*), 65
aygulus (*Anthrax*), 21, 159, 160, 163
baccha (*Exoprosopa*), 275
bagdadensis (*Exoprosopa*), 277
balioptera (*Exoprosopa*), 24, 283, 332, 335
barbatula (*Tomomyza*), 20
barbatus (*Geron*), 20, 113, 115
basalis (*Litorrhynchus*), 22, 213, 218

- basifumatus* (Bombylius), 18
batrachoides (Exoprosopa), 23, 283, 327
beckeri (Empidideicus), 20
beckeri (Exoprosopa), 277
beckerianus (Thyridanthrax), 22, 194, 197
bicellaris (Conophorina), 19
bicolor (Corsomyza), 19, 105
bicoloratus (Bombylius), 18, 32, 33, 36
bicipis (Systropus), 20, 118, 126
bifidus (Bombylius), 18, 58, 61
biflexus (Anthrax), 21, 159
bigotii (Corsomyza), 19
biguttata (Exoprosopa), 23
bilobatus (Aphoebantus), 21, 150
bimacula (Anthrax), 159
bipustulata (Corsomyza), 19, 105, 106
biumbonata (Plesiocera), 21
bivittatus (Triplasius), 18
bombiformis (Bombylius), 18, 32, 34
BOMBYLIINAE, 9, 12, 25, 30
Bombylius, 12, 18, 25, 30
bovei (Exoprosopa), 24
brachycera (Exoprosopa), 24, 285, 355
brachyrrhynchus (Bombylius), 18, 46
braunsi (Bombylius), 18, 57
braunsi (Pteraulax), 21
bravae (Villa), 22, 183
brevinasis (Exoprosopa), 24, 284, 343
brevipennis (Chiasmella), 21, 157
brevirostris (Gnumyia), 20
brunnipennis (Systoechus), 64
busiris (Exoprosopa), 24, 284, 337, 342
cadicerina (Exoprosopa), 22, 231, 232
caffra (Exoprosopa), 23
caffra (Thyridanthrax), 22
Callynthrophora, 13, 19, 25
calochromatus (Thyridanthrax), 22, 195
camptocladus (Anthrax), 21, 159, 161, 166
Canaria, 15, 21
candidata (Villa), 22, 183, 188
canus (Anastoechus), 19
capensis (Bombylius), 18, 57, 59
capensis (Callynthrophora), 19
capensis (Exoprosopa), 23, 279, 295
capensis (Geron), 20
capensis (Megapalpus), 20
capensis (Peringueyimyia), 20
capensis (Systropus), 20
capito (Pantarbes), 104
capnotoptera (Exoprosopa), 23, 282, 321
capucina (Exoprosopa), 276
carbo (Anthrax), 159
carceli (Toxophora), 20
centralis (Lomatia), 21
Cephenus, 20
cervina (Exoprosopa), 84, 285
cervinus (Anastoechus), 19, 74, 78
Chalcamoeba, 158
chalybaea (Exoprosopa), 274
Chiasmella, 21, 28, 156
Chionamoeba, 15, 21, 27, 156
chionea (Exoprosopa), 24, 285, 357
chioneus (Gonarthrus), 20, 111
Chrysamoeba, 167
chrysolampis (Hyperalonia), 363
chrysothrix (Villa), 22, 182, 186
chrySTALLINA (Exoprosopa), 24, 286, 359
chrySTALLINUS (Systoechus), 19, 63, 65
circumdata (Villa), 181
cirrha (Antonia), 21, 138
Cladodisca, 22, 228, 243
claripennis (Bombylius), 18
clathrata (Exoprosopa), 22, 231
clausa (Exoprosopa), 277
clausina (Exoprosopa), 23, 280, 301
clavatus (Systropus), 20
clavicornis (Corsomyza), 19, 105
cleomene (Exoprosopa), 275
coeruleiventris (Toxophora), 20, 130, 135
cognata (Lomatia), 22
coleoprata (Hyperalonia), 24, 361
collaris (Litorrhynchus), 22
comata (Sosiomyia), 19
commiles (Thyridanthrax), 22
compar (Exoprosopa), 23, 250, 255
completa (Exoprosopa), 277
completus (Empidideicus), 20
confusemaculatus (Anthrax), 21
connivens (Exoprosopa), 23, 251, 261
conocephala (Lomatia), 21, 143, 146
conochila (Exoprosopa), 23, 283, 325
Cononedys, 15, 27
Conophorina, 19
consanguinea (Exoprosopa), 23
conspurcatus (Anthrax), 21
contorta (Exoprosopa), 23, 280, 301
conturbata (Exoprosopa), 244
Coquillettia, 178
coracinus (Dischistus), 19, 98
Corsomyza, 13, 19, 25, 103

- corticalis* (*Litorrhynchus corticeus*, var.), 22, 212, 214
corticeus, var. *corticalis* (*Litorrhynchus*), 22, 212, 214
corvina (*Exoprosopa*), 22, 231, 232
cosmoptera (*Exoprosopa*), 24, 283, 335
costalis (*Exoprosopa*), 23
Crocidium, 13, 20, 126
croci (*Spongostylum*), 167
crudelis (*Systropus*), 20, 117, 120
ctenopterus (*Systoechus*), 19, 64, 71
cupido (*Hyperalonia*), 24, 363, 377
curvicornis (*Exoprosopa*), 23, 251, 262
cynus (*Gonarthus*), 20, 111
cylindricus (*Gonarthus*), 20, 111
CYLLENINAE, 10, 14, 135
Cyrtosia, 13, 20, 26
CYRTOSINAE, 10, 13
CYTHEREINAE, 9, 12

Dasypalpus, 20
daveyi (*Isotamia*), 21
decipiens (*Exoprosopa*), 23, 277, 287
decipiens (*Spongostylum*), 21, 169, 173
decisus (*Anthrax diffusus*, var.), 21, 160, 162
decolor (*Exoprosopa*), 23, 283, 326
decora (*Exoprosopa*), 253
decrepita (*Exoprosopa*), 24, 277
dedecor (*Exoprosopa*), 269
Defilippia, 23, 229, 249, 278
delicatus (*Bombylius*), 18, 37, 38
delineata (*Exoprosopa*), 230
dentatus (*Anthrax*), 21, 159
dentiferus (*Litorrhynchus*), 22, 213, 218
diadematous (*Dischistus*), 19, 98, 100
dichopticus (*Eurycarenum*), 19, 79, 83
dichromus (*Geron*), 20, 113
Dicranoclista, 21, 28, 178
diffusus (*Anthrax*), 21, 160, 161
diffusus, var. *decisus* (*Anthrax*), 21, 162
diffusus, var. *majusculus* (*Anthrax*), 21, 162
dilatata (*Exoprosopa*), 23, 281
dilatatus (*Litorrhynchus*), 22, 214, 225
diluta (*Exoprosopa*), 23, 280, 306
dimidiata (*Exoprosopa*), 23, 279, 280, 299, 303
dimidiatus (*Bombylius*), 18
Dimorphaphus, 14, 138
Dimorphophora, 21

diploptera (*Toxophora*), 20, 130, 134
Dischistus, 12, 19, 25, 88
discriminata (*Exoprosopa*), 23, 280
disjunctus (*Bombylius*), 18, 50, 54
dispar (*Exoprosopa*), 244
distigma (*Anthrax*), 159
divisa (*Exoprosopa*), 244
dizona (*Villa*), 21
dolichoptera (*Exoprosopa*), 23, 251, 257
doryca (*Hyperalonia*), 366
dubia (*Exoprosopa*), 22, 231, 232
dubia (*Villa*), 21
duvaucelii (*Argyramorpha*), 178
dux (*Exoprosopa*), 23, 279

eclipsis (*Exoprosopa*), 23, 252, 268
elegans (*Bombylius*), 18
elongata (*Exoprosopa*), 23, 278, 291
eluta (*Exoprosopa*), 23, 279
elutum (*Spongostylum muticum*, var.), 21
emarginata (*Exoprosopa*), 253
emarginatus (*Anthrax*), 159
emissus (*Anthrax*), 159
emittens (*Anthrax*), 159
Empidideicus, 13, 20, 26
epargyra (*Toxophora*), 20, 129
erebus (*Hyperalonia*), 24, 362, 365
eremita (*Exoprosopa*), 253
erinaceus (*Anastoechus*), 19, 74, 78
erronea (*Exoprosopa*), 24, 285, 354
erythraeus (*Litorrhynchus*), 214, 224, 226
erythrocerus (*Bombylius*), 18, 50
escheri (*Aphoebantus*), 149
eurhynatus (*Bombylius*), 18, 46
Eurycarenum, 19, 25, 78
evanescens (*Exoprosopa*), 277
evanida (*Hyperalonia*), 24, 361, 365
exigua (*Exoprosopa*), 23
exiguus (*Bombylius*), 48
exilipes (*Systoechus*), 19, 63, 69
Exoprosopa, 15, 22, 29, 227, 229, 275
EXOPROSOPINAE, 10, 15, 28, 181
Exoptata, 22, 228, 244

fallaciosa (*Exoprosopa*), 245
fallax (*Anthrax*), 159
famula (*Exoprosopa*), 24, 285
farinosa (*Exoprosopa*), 269
farinosus (*Dischistus*), 19, 94, 97
fasciolaris (*Lomatia*), 21
fascipennis (*Exoprosopa*), 253
fastidiosa (*Exoprosopa*), 23, 278, 291

- femoralis* (Bombylius), 18, 50, 52
fenestralis (Thyridanthrax), 22
fenestrata (Glossista), 19
fenestratus (Thyridanthrax), 206
ferruginea (Exoprosopa), 24
ferrugineus (Systoechus), 18
fimbriatella (Exoprosopa), 22, 235, 236
fissicornis (Exoprosopa), 24, 285, 350
flagrans (Bombylius), 18, 32, 33
flammiger (Thyridanthrax), 22, 194, 199
flavescens (Villa), 21
flavicans (Exoprosopa), 23, 252, 269
flaviceps (Bombylius), 18
flavipes (Villa), 21, 182
flavus (Bombylius), 18
flexicornis (Pteraulax), 21
formosula (Exoprosopa), 23, 286
frontalis (Chionamoeba), 21, 156
frontalis (Dischistus), 19
fucatus (Bombylius), 18, 47
fuciformis (Synthesia), 22
fuligineus (Systoechus), 19
fulviceps (Megapalpus), 20
fulvipes (Petrorossia), 21, 152, 154
fulvonotatus (Bombylius), 18
fulvula (Petrorossia), 154
fumipennis (Exoprosopa), 346
furius (Bombylius), 18, 38, 44
fuscescens (Exoprosopa), 23, 278
fuscosta (Petrorossia), 21, 152, 153
fuscolobus (Bombylius), 18, 37, 41
fuscipennis (Adelidea), 19
fuscipennis (Anthrax), 21, 159, 161, 167
fuscipennis (Corsomyza), 19
fuscipennis (Toxophora), 131
fusconotata (Exoprosopa), 277
fuscula (Exoprosopa), 23, 282, 321
fuscus (Bombylius), 32

gallus (Thyridanthrax), 193
gemmeus (Dischistus), 19, 94
gentilis (Exoprosopa), 23, 282, 314
Geron, 13, 26, 26, 112
gibbicornis (Dischistus), 19, 98
gibbiventris (Pantostomus), 20
gibbosus (Geron), 114
gigantea (Lomatia), 21, 142
globulus (Bombylius), 18, 46
gloriosa (Hyperalonia), 24
Glossista, 13, 19, 25
Gnumyia, 20, 25
goliath (Exoprosopa), 24, 284, 341
Gonarthrus, 20, 26, 109
gradatus (Systoechus), 65

grandis (Exoprosopa), 251, 262
gratiosa (Petrorossia), 21, 152, 155
griseipennis (Exoprosopa), 277
griseus (Exoprosopa), 23, 280
guttipennis (Exoprosopa), 24

haemorrhoidalis (Bombylius), 18, 32, 33, 36
halteralis (Geron), 114
hamatus (Litorrhynchus), 22
haustellata (Exoprosopa), 22, 235, 236
helenia (Hyperalonia), 24, 362, 366
hemimelas (Anthrax), 21, 159, 161, 166
Hemipenthes, 15, 28
Henica, 14, 20, 27, 135
Heniconeura, 20
hermanni (Antonia), 140
heros (Exoprosopa), 23, 279, 295
hesperus, var. *tropicalis* (Petrorossia), 21, 151, 152
hessii (Anthrax), 21, 160, 161
Heteralonia, 22, 228, 229
heterocera (Exoprosopa), 24, 285
heterocerus (Dischistus), 19
heteropterus (Dischistus), 19
heteropterus (Pseudoammictus), 20
heteropygus (Anthrax), 159
Heterostylum, 78
HETEROTROPINAE, 10
hippolyta (Spongostylum), 21
hirticeps (Bombylius), 18
hirtipes (Corsomyza), 19, 105
hirtipes (Exoprosopa), 23, 252, 267
hirtus (Bombylius), 18, 57
hirtus (Gonarthrus), 20, 111
hispanus (Thyridanthrax), 193
holaspis (Systropus), 20
homeyeri (Sisyrophanus), 19, 84
Homoeophthalmæ, 12, 24, 30
homogeneous (Anthrax), 21, 159
hottentota (Villa), 181, 186
humilis (Apolysis), 20
hyalodisca (Exoprosopa), 23, 281
hybridus (Geron), 20, 113
hypargira (Exoprosopa), 23, 278
Hyperalonia, 15, 24, 29, 360
Hyperusia, 19, 26, 107
hypoleucus (Bombylius), 18, 57, 58
hypomelaena (Exoprosopa), 24, 285
hypoxanthus (Bombylius), 18

ignava (Exoprosopa), 23, 278
immaculatum (Crocidium), 20
impurus (Bombylius), 18, 46, 47
inaequalipes (Exoprosopa), 23, 283
inauratus (Thyridanthrax), 22, 194, 204

- incipiens (Thyridanthrax), 22, 195, 208
 incisurale (Spongostylum), 21, 169, 172
 incisurale, *var. inquirendum* (Spongostylum), 21, 169, 172
 indigenus (Thyridanthrax), 193
 inermis (Exoprosopa), 24, 285, 351
 infumata (Exoprosopa), 23, 279, 295
 infuscata (Lomatia), 21, 143, 145, 221
 infuscatus (Litorrhynchus), 22, 212
 innocuus (Anastoechus), 19, 74
 inornata (Exoprosopa), 24
 inornata (Lomatia), 21, 143, 145
 inornatus (Bombylius), 18
 inquirendum (Spongostylum in-
 cisurale, *var.*), 21, 169, 172
 insularis (Exoprosopa), 22
 interrupta (Exoprosopa), 245
 iris (Exoprosopa), 277
 Isocnemus, 19, 31, 101
 Isotamia, 15, 21, 27
 italica (Exoprosopa), 275
 ixiom (Villa), 183

 jacchoides (Exoprosopa), 23, 277
 jacchus (Exoprosopa), 274

 katonae (Exoprosopa), 22, 235, 241
 kilimandjaricus (Bombylius), 18, 38, 43

 laeta (Phthiria), 20
 laetus (Thyridanthrax), 22, 195, 211
Lagochilus, 20
 lanigera (Phthiria), 20
 lasia (Villa), 21, 182, 186
Lasioprosopa, 19
 lateralis (Triplasius), 18, 31
 lateralis (Villa), 181
 laticeps (Eurycarenum), 19, 79
 latifrons (Anastoechus), 19
 latifrons (Exoprosopa), 24, 283, 327
 latissima (Exoprosopa), 24, 285, 353
 latiuscula (Lomatia), 21, 143, 148
 Lepidanthrax, 15
 lepidogastra (Exoprosopa), 23, 252, 271
 Lepidophora, 14
 lepidus (Dischistus), 19, 89, 93, 94, 95
 leptocerus (Geron), 20, 113
 leptocerus (Sisyrophanus), 19, 84
 leptogaster (Systropus), 20, 117, 121
 leptopa (Villa), 22

 letho (Petrorossia), 21, 152, 153
Leucamoeba, 15
 leucochila (Villa), 22, 183, 188
 leucogaster (Anthrax), 159
 leuconoe (Hyperalonia), 363
 leucophys (Gonarthrus), 21, 111, 112
 leucopogon (Spongostylum), 21, 169, 174
 leucoproctus (Thyridanthrax), 22, 194
 leucosoma (Anastoechus), 19, 74
leucostoma (Villa), 22, 181, 188
 limbipennis (Bombylius), 18
 linearis (Exoprosopa), 24, 284, 339
 lineus (Thyridanthrax), 22, 194, 201
 Litorrhynchus, 15, 22, 29, 211
 liturata (Lomatia), 15, 20, 27, 141
 lloydi (Thyridanthrax), 22, 194, 195
 loewiana (Exoprosopa), 23, 279
 loewii (Lomatia), 21
 Lomatia, 15, 20, 27, 141
 LOMATIINAE, 10, 14, 27, 136
longipennis (Litorrhynchus), 22
longirostris (Adelidea), 19
 longirostris (Henica), 135
 longirostris (Petrorossia), 21
 longitarsis (Petrorossia), 21
 longitudinalis (Lomatia), 21, 142
 lucidifrons (Exoprosopa), 252
 luctifera (Exoprosopa), 23, 281
 luctuosus (Geron), 20, 113
 lugens (Bombylius), 18, 37, 40
 lugens (Thyridanthrax), 22, 194, 202
 lugubris (Bombylius), 23
 lugubris (Exoprosopa), 252
 luteicosta (Exoprosopa), 24, 285, 350
 luteifacies (Hyperusia), 20, 108
 luteipennis (Bombylius), 18, 47, 49
 luteolus (Thyridanthrax), 22, 194, 200

macilentus (Systropus), 20
 macquarti (Thyridanthrax), 22, 195, 206
 macrophthalmus (Anastoechus), 19, 74
 macropterus (Litorrhynchus), 22, 213, 214
 macrorrhynchus (Anastoechus), 19, 73, 74
 maculata (Toxophora), 20, 130
 maculatus (Bombylius), 36
 maculifera (Exoprosopa), 23, 251, 261
 maculipennis (Anthrax), 21
 maculipennis (Toxophora), 20, 130
 maculosa (Anthrax), 162

- maculosa* (Exoprosopa), 23, 251, 260
madagascariensis (Exoprosopa), 23, 279, 295
madagascariensis (Villa), 22
maenas (Exoprosopa), 275
magnifrons (Callynthrophora), 20
magnipennis (Exoprosopa), 24, 284, 344
major (Exoprosopa), 23, 283, 324
majusculus (Anthrax diffusus, var.), 160, 162
mara (Hyperalonia), 362
marginalis (Exoprosopa), 23
marginellus (Bombylius), 18, 47
MARIOBEZZIINAE, 10
mars (Hyperalonia), 24, 363, 373
mars, subsp. vulcanus (Hyperalonia), 24, 363, 375
marshalli (Systropus), 20, 117, 118
massauense (Spongostylum), 21
massinissa (Anthrax), 21, 159
maurus (Litorrhynchus), 22, 213, 218
mayeti (Exoprosopa), 252
Megapalpus, 13, 20, 26
megaspilus (Bombylius), 18, 57, 59
megerlei (Exoprosopa), 250, 252
meigenii (Exoprosopa), 294
melaena (Exoprosopa), 262
melampogon (Lomatia), 21, 143, 147
melampogon (Systoechus), 19, 63, 70
melanaspis (Exoprosopa), 23, 282, 316
melania (Anthrax), 159
melanopleurus (Thyridanthrax), 22, 194, 201
melanoptera (Exoprosopa), 277
melanopus (Bombylius), 18, 50, 53
melanurus (Bombylius), 18
melanurus (Dischistus), 19
melanurus (Eurycarenus), 19, 79, 80
melleus (Empidideicus), 20
mentiens (Systoechus), 19, 63, 68
meridionalis (Anastoechus), 19, 73, 77
merope (Exoprosopa), 24, 325, 329
Mesoclis, 228, 229
mesopleuralis (Exoprosopa), 24, 284, 348
Metapenta, 22, 228, 230
metapleuralis (Litorrhynchus), 22, 214, 224
micans (Bombylius), 18, 30, 56, 57, 58
Mima, 249
minimus (Dischistus), 89, 98
minimus (Eurycarenus), 19, 79
minois (Exoprosopa), 24, 269
minor (Bombylius), 30, 45
minor (Hyperusia), 20
minor (Sisyrophanus), 19, 84, 87
minos (Exoprosopa), 269
miobrochus (Systropus), 20
miscens (Bombylius), 48
mitis (Lomatia), 21, 143
mixtum (Spongostylum), 21
mixtus (Systoechus), 64, 70
modestus (Bombylius), 18, 45, 46
molitar (Bombylius), 18, 58, 59
mollis (Bombylius), 18, 50, 53, 54
Molybdamoeba, 21, 167, 172
monacha (Hyperalonia), 24, 362
morio (Hyperalonia), 373
morosa (Exoprosopa), 23, 278
mucorea (Exoprosopa), 24, 277
munda (Exoprosopa), 244
mundus (Bombylius), 18, 45, 46
muscarius (Anthrax), 21, 159
muticum (Spongostylum), 21, 168
mutilatus (Bombylius), 18, 37
mydasiformis (Exoprosopa), 23, 252, 271
mystaceum (Spongostylum), 167
mystacinus (Geron), 113
mystax (Dischistus), 19, 88, 89
nasutus (Geron), 20, 113, 114
neavei (Lomatia), 21, 142, 143
neavei (Sisyrophanus), 19, 84, 85
neithokris (Bombylius), 18, 50
nemesis (Exoprosopa), 23, 277, 286
nemestrinus (Isocnemus), 19, 101
neurospila (Exoprosopa), 23, 251
nigerrima (Exoprosopa), 23, 250, 256
nigerrimus (Anthrax), 21, 160, 164
nigerrimus, subsp. ocellatus (Anthrax), 21, 161, 165
nigrescens (Lomatia), 21
nigribarbus (Bombylius), 18
nigrifacies (Crocidium), 20
nigrifera (Exoprosopa), 23, 253
nigrifrons (Antonia), 21, 141
nigrilobus (Bombylius), 18, 37, 40
nigrina (Exoprosopa), 23, 282, 317
nigripecten (Bombylius), 18, 58
nigripennis (Hyperalonia), 24, 361, 363, 365
nigripes (Corsomyza), 19, 105, 106
nigripes (Systoechus), 19, 63, 68
nigrispina (Exoprosopa), 23, 282, 317
nigritella (Exoprosopa), 23, 280, 304
nigrovenosa (Exoprosopa), 23, 251, 259

- nilatica (Villa), 22
 niphias (Spongostylum), 21
 nitens (Phthiria), 20
 nitidus (Megapalpus), 20
 nivea (Chionamoeba), 156
 niveifrons (Hyperalonia), 24, 361, 363
 niveus (Dischistus), 19, 91
 nivifrons (Bombylius), 48
 noctilio (Exoprosopa), 23, 250, 254
 Nomalonia, 14, 27
 nonna (Exoprosopa), 277
 normalis (Exoprosopa), 245
 notabilis (Exoprosopa), 23, 286
 nova (Exoprosopa), 23, 281, 314
 novaeformis (Exoprosopa), 23, 323
 nox (Exoprosopa), 23
 nubeculosa (Exoprosopa), 277
 nubilus (Bombylius), 45, 49, 50
 nucalis (Dischistus), 19, 94, 96
 nyasae (Litorrhynchus), 22, 213, 223

 obesus (Bombylius), 18, 57
 obesus (Oestranthrax), 22, 191
 obtusa (Exoprosopa), 23, 279, 297
 obtusus (Bombylius), 18, 50, 56
 obumbratus (Litorrhynchus), 22, 214, 226
 oclusa (Exoprosopa), 277
 occulta (Exoprosopa), 22, 229
 ocellatus (Anthrax nigerrimus, *subsp.*), 161, 165
 oculata (Exoprosopa), 22, 229
 ocyale (Spongostylum), 21
 oenomaus (Hyperalonia), 363
 Oestranthrax, 22, 29, 189
 offuscata (Exoprosopa), 22, 235
 Oligodranes, 13, 16, 110
 olivierii (Exoprosopa), 24, 277
 olivierii (Geron), 114
 Oniromyia, 19, 25
 orientalis (Exoprosopa tricolor, *subsp.*), 23, 313
 ornatus (Bombylius), 18, 31, 36, 37, 42
 ornatus, *var. pleuralis* (Bombylius), 43
 ovatus (Dischistus), 19, 91

 pachycerata (Oniromyia), 19
 pallasii (Exoprosopa), 262
 pallida (Exoprosopa), 24, 283, 329
 pallidulus (Bombylius), 18
 pallipes (Tomomyza), 20
 palustris (Exoprosopa), 23, 282, 320
 pandora (Exoprosopa), 3
 paniscoides (Villa), 21, 182, 184
 Pantarbes, 12, 104
 Pantostomus, 20, 27

 Parabombylius, 54
 parallelus (Bombylius), 18, 50, 51
 paris (Hyperalonia), 24, 362, 366
 Parisus, 18, 46
 parva (Exoprosopa), 23, 318
 parvicellula (Exoprosopa), 24, 286
 parvula (Exoprosopa), 23, 282, 318
 paterculus (Bombylius), 18, 47
 paupera (Exoprosopa), 24
 pavidia (Exoprosopa), 253
 pectoralis (Dischistus), 19, 98
 pectoralis (Exoprosopa), 250, 252
 pediformis (Exoprosopa), 21, 285, 351
 pennipes (Corsomyza), 19, 105
 pennipes (Exoprosopa), 23, 274
 pentala (Exoprosopa), 22, 231
 pentaspilus (Bombylius), 18, 57
 pentoptera (Exoprosopa), 24, 284
 peringueyi (Bombylius), 18, 58
 Peringueyimyia, 14, 20, 27
 perplexus (Litorrhynchus), 22, 214
 perpulchra (Exoprosopa), 23, 281, 310
 personata (Exoprosopa), 22, 235, 237
 perspicillaris (Thyridanthrax), 193, 207
 Petrorossia, 15, 21, 27, 151
 phaeoptera (Exoprosopa), 249
 phaeopterus (Bombylius), 18, 46
 phaeopterus (Systoechus), 19, 63, 66
 phaeotaenia (Villa), 21, 183
 phallophorus (Geron), 20, 113
 phloeochromus (Litorrhynchus), 22, 212
 Phthiria, 13, 20, 26
 PHTHIRIINAE, 10, 13, 109
 pictipennis (Lomatia), 21, 142, 145
 pictipennis (Tomomyza), 20
 pilimana (Exoprosopa), 22, 235
 pilirostris (Bombylius), 49
 pithecius (Anthrax), 21, 160, 161
 Plesiocera, 15, 21, 28
 pleuralis (Bombylius ornatus, *var.*), 18, 37, 43
 pleuralis (Lomatia), 21, 143
 Ploas, 62
 plorans (Bombylius), 18, 37, 38
 plumipalpis (Dischistus), 19, 89
 pluricellata (Henica), 20
 poeciloptera (Exoprosopa), 24, 283, 333
 poecilopterum (Crocidium), 20
 polyaspila (Exoprosopa), 22, 235, 238
 praefica (Exoprosopa), 23, 251, 265
 priapeus (Geron), 20, 113
 princeps (Spongostylum), 21, 169, 176

- productus* (*Litorrhynchus*), 22, 214, 227
protuberans (*Exoprosopa*), 23, 279, 298
Psamatamoeba, 15, 167
Pseudempis, 20
Pseudoamictus, 20, 26
pseudocollaris (*Litorrhynchus*), 22, 213, 219
pseudoflammiger (*Thyridanthrax*), 22, 194, 197
Psiatholasius, 13, 20, 26
Pteraulax, 21, 27
Pterobates, 23, 229, 273
pubescens (*Phthiria*), 20
pulchriceps (*Lomatia*), 21, 143, 148
pulla (*Phthiria*), 20
punctatellus (*Bombylius*), 18, 57
punctatus (*Bombylius*), 32
punctifer (*Bombylius*), 18, 57, 59
punctifrons (*Exoprosopa*), 23, 282, 318
punctifrons (*Lomatia*), 21, 143, 146
punctinervis (*Exoprosopa*), 244
punctipenne (*Spongostylum*), 21, 169, 174
punctipennis (*Aptomyza*), 20
punctipennis (*Exoprosopa*), 24
punctipennis (*Toxophora*), 20, 130, 133
punctulata (*Exoprosopa*), 23, 281, 309, 310
punctulatum (*Spongostylum*), 21
purpureus (*Bombylius*), 18, 57, 58
pusilla (*Exoprosopa*), 23, 277, 286
pusillus (*Anthrax*), 21, 159, 161, 166
pusio (*Dischistus*), 19
pygmalion (*Exoprosopa*), 229
pyrrhocerus (*Sisyrophanus*), 19, 84

quinquemaculatum (*Spongostylum*), 21, 168, 170

rasa (*Exoprosopa*), 23, 310
rectifascia (*Exoprosopa*), 23, 278, 292
recurrens (*Exoprosopa*), 22, 236
referta (*Exoprosopa*), 24, 284, 338
repletus (*Litorrhynchus*), 22, 214
restricta (*Exoprosopa*), 23, 280
reticulata (*Exoprosopa*), 22, 231
retracta (*Exoprosopa*), 23, 279, 300
ricardoi (*Litorrhynchus*), 22, 213
rivularis (*Exoprosopa*), 244
rivulosa (*Exoprosopa*), 277
robertii (*Exoprosopa*), 23, 281, 313
robustus (*Systoechus*), 19, 63, 64
rostratus (*Litorrhynchus*), 22
rubella (*Exoprosopa*), 22, 235, 341

rubescens (*Exoprosopa*), 23, 280, 304
rubicundus (*Anastoechus*), 19, 73, 75
rubicundus (*Dischistus*), 19, 91
rubricosus (*Anastoechus*), 19, 73
rufa (*Hyperalonia*), 361
rufa (*Lomatia*), 21
ruficeps (*Bombylius*), 18, 47
ruficeps (*Villa*), 22
rufigornis (*Corsomyza*), 19, 106
rufina (*Exoprosopa*), 23, 280
rufipes (*Villa*), 21
rufirostris (*Dischistus*), 19, 92
rufiventris (*Bombylius*), 18, 38, 44
rufocantennatus (*Bombylius*), 18
rufus (*Bombylius*), 18
rugosus (*Systropus*), 20, 118, 123
rutila (*Exoprosopa*), 246
rutiloides (*Exoprosopa*), 23, 246, 247

sabulina (*Exoprosopa*), 277
sabulonis (*Chionamoeba*), 156
sanguineus (*Systropus*), 20
saturatum (*Spongostylum*), 21, 169, 173
Satyramoeba, 15, 158
scabrirostris (*Systoechus*), 19, 63
scalaris (*Exoprosopa*), 23, 278, 294
scaligera (*Exoprosopa*), 23, 278
schmidtii (*Exoprosopa*), 24, 337
scutellaris (*Cyrtosia*), 20
scutellaris (*Systoechus*), 19
scutellatus (*Aphoebantus*), 149
scutellatus (*Systoechus*), 19
selene (*Thyridanthrax*), 192
semiflavida (*Exoprosopa*), 269
Semiramis, 110
semirufa (*Chionamoeba*), 156
semiscitus (*Anthrax*), 159
senegalensis (*Dischistus*), 19, 98, 99
senegalensis (*Exoprosopa*), 23, 251, 264
senex (*Bombylius*), 31, 62
seniculus (*Exoprosopa*), 23, 278, 290
seriatus (*Dischistus*), 19, 89, 91, 92
sericeus (*Systropus*), 20, 118, 124
Sericosoma, 13, 104
serpentata (*Exoprosopa*), 22, 244
serva (*Exoprosopa*), 24, 285, 353
servillei (*Bombylius*), 18, 57
sessilis (*Bombylius*), 18, 46
sessilis (*Eurycarenum*), 19, 79
sexfasciata (*Villa*), 21, 182, 183
siccifolius (*Litorrhynchus*), 22, 213, 216
sicula (*Exoprosopa*), 245
sigmoidea (*Exoprosopa*), 23, 279, 299

- silvestrii* (Systropus), 20, 118
simplex (Corymyza), 19, 105
simplex (Lomatia), 21, 143
simplex (Systoechus), 19, 63, 67
simplicipennis (Bombylius), 18, 58, 59
simpsoni (Dicranoclista), 21, 180
singularis (Exoprosopa), 23, 245
sisyphus (Hyperalonia), 24, 362, 366, 368
Sisyrophanus, 19, 25, 84
snowi (Systropus), 20
Sobarus, 19
sokotrae (Thyridanthrax), 22
soror (Hyperusia), 20
Sosiomyia, 19, 25
Sparnopolius, 12, 84
spectabilis (Anthrax), 21
spectrum (Exoprosopa), 24, 284, 346
speiserianus (Oestranthrax), 22, 191
sphinx (Hyperalonia), 24
spiloptera (Lomatia), 21, 143, 148
spinibarbus (Bombylius), 18, 58
spinifacies (Anastoechus), 19, 73
spinithorax (Systoechus), 19, 64
spoliata (Exoprosopa), 22, 235, 239
Spongostylum, 15, 21, 28, 167
squamea (Exoprosopa), 277
stannusi (Exoprosopa), 23, 282, 320
stenogastra (Petrorossia), 151
stenomelaena (Exoprosopa), 23, 280, 307
Stomylymyia, 15, 28
Stonyx, 15, 211
strenua (Exoprosopa), 23, 251
striatus (Psiatholasius), 20
stupida (Exoprosopa), 285, 352
stylicornis (Systoechus), 19
suavipennis (Exoprosopa), 24, 283, 331
suavissima (Antonia), 21, 137
subanthrax (Spongostylum), 21, 168, 169
suberosus (Litorrhynchus), 22, 213, 215
submacula (Thyridanthrax), 22
subperspicillaris (Thyridanthrax), 22, 195, 207
suffusa (Exoprosopa), 22, 244
suffusipennis (Exoprosopa), 22, 236
suffusus (Bombylius), 18, 32
suspensus (Litorrhynchus), 22, 214, 226
Synthesisia, 22, 29
syrphoides (Antonia), 21
Systoechus, 12, 18, 25, 62
 SYSTROPINAE, 10, 14, 116
Systropus, 14, 20, 26, 116
tabanoides (Exoprosopa), 24, 284, 337
tamerlan (Exoprosopa), 246
tantalus (Hyperalonia), 363
telamon (Exoprosopa), 276
temnocera (Exoprosopa), 24, 285, 350
tenera (Lomatia), 21, 143
tenuis (Exoprosopa), 23
tephroleuca (Exoprosopa), 332
terminatus (Bombylius), 18, 50, 52
terminus (Exoprosopa), 23
ternarius (Thyridanthrax), 22, 195, 209
thoracica (Exoprosopa), 24, 284, 347
Thyridanthrax, 15, 29, 192
thyridophora (Hyperalonia), 24, 362, 372
tinctus (Bombylius), 18
tollini (Litorrhynchus), 22, 213, 221, 222
Tomomyza, 14, 20, 27
 TOMOPHTHALMAE, 14, 27, 136
Toxophora, 14, 20, 26, 128
 TOXOPHORINAE, 10, 14, 128
transiens (Hyperalonia), 24, 362, 370
transiens (Thyridanthrax), 22, 194, 203
triangularis (Thyridanthrax), 22, 194, 195
tricolor (Exoprosopa), 23, 281, 312
tricolor, subsp. orientalis (Exoprosopa), 23, 313
trifasciatus (Anthrax), 159
trigonalis (Systropus), 20, 118, 127
trimaculatus (Anthrax), 21, 159, 160, 163
Trinaria, 23, 229, 245
Triplasius, 12, 25
triplex (Exoprosopa), 23, 281, 311
tripudians (Bombylius), 18, 38, 43
tripunctatum (Spongostylum), 172
tripunctatus (Anthrax), 159
tripunctatus (Dischistus), 19, 92
trispinosus (Systropus), 20, 117
trivittata (Toxophora), 20, 130, 131
tropicalis (Petrorossia *hesperus*, var.), 152
truquii (Exoprosopa), 252
tuckeri (Exoprosopa), 23
tumidifrons (Systoechus), 19, 63
umbripennis (Geron), 20, 113
umbrosa (Exoprosopa), 22
unifasciata (Exoprosopa), 23
unifasciata (Villa), 22
Usia, 13, 16
 USINAE, 10, 13, 101

- vagans (Thyridanthrax), 192
 validicornis (Villa), 22, 182, 184
 vandykei (Spongostylum), 178
 variegatus (Dischistus), 19, 92
 varinervis (Exoprosopa), 230
 varipecten (Anastoechus), 19, 73
 varius (Anthrax), 164
 venosa (Exoprosopa), 23, 251, 257,
 259
 ventrale (Spongostylum), 21, 169,
 174
 ventruosus (Systoechus), 19, 63
 venus (Hyperalonia), 24, 363, 373,
 376
 vespertilio (Exoprosopa), 252
 vesperugo (Exoprosopa), 253
 vetula (Exoprosopa), 24
 viduatus (Thyridanthrax), 22, 194,
 202
 Villa, 15, 29, 181
 villaeformis (Exoprosopa), 24, 283,
 329
 villosa (Exoprosopa), 23, 250, 253
 vinula (Petrorossia), 21, 152
 violacea (Exoprosopa), 22, 236, 241
 virgo (Hyperalonia), 24, 362, 369
 vitreicosta (Exoprosopa), 359
 vitripennis (Dischistus), 19, 98
 vitripennis (Toxophora), 20, 130
 vitripennis (Villa), 21, 182, 184
 vittata (Hyperalonia), 24, 361
 vittipes (Dischistus), 19, 92
 volitans (Anthrax), 21
 vulcanus (Hyperalonia mars, *subsp.*),
 24, 363, 375
 vulpinus (Systoechus), 19, 63, 70
 xanthinus (Gonarthrus), 20, 111,
 112
 xanthocerus (Bombylius), 18, 47
 xanthogramma (Antonia), 21, 140
 zona (Exoprosopa), 244
 Zygodipla, 244

